

*M. J. Dorsey*

# BOTANICAL ABSTRACTS

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# BOTANICAL ABSTRACTS

A monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense.

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J. R. SCHRAMM, Editor-in-Chief

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## AGRONOMY (CROPS AND SOILS)

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MARY R. BURR, *Associate Editor* (Crops)

T. D. RICE, *Associate Editor* (Soils)

(See also in this issue Entries 7631, 7688, 7731, 7777, 7824, 7851, 8000, 8016, 8059, 8094, 8153, 8175)

## CROP SCIENCE (ARVICULTURE)

7573. ANONYMOUS. *Anbau von Kenaf in Nordpersien*. [Growing of *Hibiscus cannabinus* in northern Persia.] *Tropenpflanzer* 22: 21-22. 1919.—*Hibiscus cannabinus* grows wild south of the Caspian Sea on heavy soils, deserted rice fields, etc. It is especially cultivated in the Province of Gilan, Persia, also in Masandran and Tabisch. Some years ago northern Persia produced about 30,000 pounds of fibers; at present, on account of the Russian demand, about 45,000 pounds are produced. The crude fiber contains a considerable amount of resin and viscous material, therefore an ordinary soaking in water is not sufficient for cleaning. Fibers are sorted into 4 grades according to purity. No. 1, 40%; no. 2, 30%; no. 3, 20% and no. 4, 10%.—*J. C. Th. Uphof*.

7574. ANONYMOUS. *Baumwollenbau im argentinischen Chaco*. [Cotton growing in the Argentine Chaco.] *Tropenpflanzer* 23: 188-189. 1920.—Conditions influencing cotton growing in Chaco, Argentina, are discussed. Long and short staple are equally valued. Labor conditions are favorable.—*J. C. Th. Uphof*.

7575. ANONYMOUS. *Cane varieties in the Hawaiian Islands*. *Australian Sugar Jour.* 16: 841. 1925.—A method based on "scientific mathematical selection and elimination," by which E. F. Eckert hopes to overcome the factor of environment is described.—*Nellie E. Fealy*.

7576. ANONYMOUS. *Cooperative sugar farming in practice*. *Progress of the Doorkop Sugar Estates, Ltd.* *South African Sugar Jour.* 9: 91, 93, 95. 5 fig. 1925.—Detailed information is given relative to a specific plan to extend the sugar belt of Natal. Under this plan a company is disposing of a large tract of land in plots of 20 to 30 acres; the purchaser is given a

guarantee as to the suitability of the land for sugar-cane growing, and the company undertakes to prepare, plant, and cultivate the land, and to harvest and market the crop at a cost of 10% of the net profit.—Details are given relative to topography, soil and climatic conditions.—*Nellie E. Fealy.*

7577. ANONYMOUS. **Field experiments, 1924.** Jour. Dept. Lands and Agric. [Ireland] 24: 424-439. 1925.—Various types of phosphatic manures gave different results relative to each other when tested on meadow hay, pasture, turnips, and potatoes. Variety tests with barley, wheat, oats, turnips, mangels, and potatoes are described. Lime increased the yield of oats grown in a 4-year rotation.—*Donald Folsom.*

7578. ANONYMOUS. **Mondbohne in Madagaskar.** [*Phaseolus lunatus* in Madagascar.] Tropenpflanzer 22: 129-130. 1919.—*Phaseolus lunatus* is grown in southwestern Madagascar, covering 4000-6000 ha. of fertile land. One ha. produces 400-500 kg., sometimes as much as 1500-1600 kg. Seed are planted in March and April, and are harvested in September and October. Export increased from 700 tons in 1910 to 8000 tons in 1913 and 14,000 tons in 1916. White beans are preferred to the brown. There is no regularity as to sorting. Beans are exported to England and France.—*J. C. Th. Uphof.*

7579. ANONYMOUS. **Süssholz in Mähren.** [Liquorice in Moravia.] Tropenpflanzer 22: 263. 1919.—In southern Moravia *Glycyrrhiza glabra* is still grown in some localities, especially where other crops can not be easily grown, for example, along steep places and in vineyards which suffered from *Phylloxera*. When the soil has been dug in autumn, parts of the roots are planted 70 cm. apart and 50 cm. deep. The first year beans are grown as an intercrop; the 2nd year maize; the 3rd, maize for green fodder, and the 4th year, garlic. The soil is cultivated with the hoe. The shoots of the liquorice are gathered and used as fuel. The 4- and 5-year plants are harvested. The soil is dug about 1 m. deep in order to gather the roots; and at the same time a new supply is planted, as this crop can be grown several years on the same land; 2500 to 4000 kg. are produced per ha.—*J. C. Th. Uphof.*

7580. BUSZ. **Stand und Bedeutung der Maiszuchten in Deutschland.** [Status and importance of maize growing in Germany.] Mitteil. Deutsch. Landw. Ges. 40: 293-296. 1925.—It has been found that adequate moisture during the growing season is more important than temperature and that by the selection of the right varieties maize can be grown in many parts of Germany. The speaker discussed the importance of maize, gave some cultural data and reported on yields from several varieties in different sections of Germany.—*A. J. Pieters.*

7581. CHEVALIER, A. **Le problème de la culture du cotonnier dans nos colonies et la nécessité d'une organisation scientifique pour le résoudre.** [The problem of growing cotton in our colonies and the necessity of scientific organization for its solution.] Rev. Scientifique 63: 75-84, 107-112, 129-160. *Illus.* 1925.—A detailed historical account is given of the introduction and the growing of cotton in all French colonies. In view of the enormous areas of land in these colonies which are suitable for growing cotton, the author believes that this industry could be developed to a point where cotton would be an export product for France and her colonies, instead of being an import product as it is now. That cotton growing has not been developed as it might be, is due to the following causes: lack of modern farm equipment and machinery, inadequate transportation facilities, lack of technically trained men who are familiar with cotton culture, inefficient labor, and the lack of organization among the cotton growers. It is suggested that the remedy for this situation lies in the creation of a cotton growers' organization that would stimulate interest in the cotton problem both from the political and the financial standpoints. In this manner it would then be possible to institute experiment stations which would be devoted to the study of tropical agriculture problems, and especially the cotton problem, thus encouraging the inflow of trained men. Up to the present time it has been necessary to employ foreigners, usually American or English, where any progress has been made.—*A. E. Hitchcock.*

7582. DAVIDSON, W. D. **Potato growing for seed purposes.** Jour. Dept. Lands and Agric. [Ireland] 24: 374-423. 1925.—Complete directions are given for the profitable growing of potatoes for seed in Ireland. A list of varieties grown in Ireland is given, with synonyms and with the distinguishing characteristics of each variety, including the susceptibility or immunity to black scab (*Synchytrium endobioticum*).—*Donald Folsom.*



7583. DEERR, NOËL. **Note on some Indian canes.** Internat. Sugar Jour. 27: 81. 1 fig. 1925.—In contrast to the fact that in most parts of the world drainage is considered of first importance in sugar-cane growing, there are in northern India extensive areas where cane is grown on low land which is submerged the greater part of the year. The canes grown in these areas are slender, with swollen internodes and in proportion to diameter have a thick outer rind. The fiber is high, running to about 16%, but the juice is often of high sugar content and purity, a sample of Hatthoni taken on Oct. 17, 1924, from cane planted in Feb. giving juice of 18.9 Brix, 15.9 sugar, 86.5 purity. A number of these peculiar canes are grown in Behar, that is, Baruk, Nagori, Sewari, Kewali, and Haruki.—*Nellie E. Fealy.*

7584. EARLE, F. S. **Cane varieties resistant to salt lands.** Jour. Dept. Agric. Porto Rico 8<sup>2</sup>: 14-15. 1924.—This paper was read before the Association of Sugar Technologists of Porto Rico (1924). Lands too salty for the growing of ordinary varieties of sugar cane are to be found on both the north and south coasts of Porto Rico, but more frequently on the dry south coasts than on the wet north coasts. The author gives a brief discussion of the relative adaptability of varieties to these salty lands.—*Melville T. Cook.*

7585. EARLE, F. S. **Sugar-cane cultivation.** Jour. Dept. Agric. Porto Rico 8<sup>2</sup>: 7-13. 1924.—This paper was read before the Association of Sugar Technologists of Porto Rico, June 1924. Methods of sugar cane agriculture are 50 years behind those of sugar manufacture. Growers are still following the old methods in use on virgin soils, which are not satisfactory for old lands. They have been largely responsible for the development of root diseases and the going out of old varieties, such as Otaheite, Rayada and Cristalina. The author urges the use of up to date methods of tillage such as are practised with corn, cotton and other crops so as to provide for aeration of roots and conservation of moisture. A discussion of the 3 systems of cultivation in use in Porto Rico is included.—*Melville T. Cook.*

7586. ELLIOTT, A. G. **Kikuyu grass in Auckland Province: comparison with paspalum.** New Zealand Jour. Agric. 30: 28-34. 1925.—True kikuyu grass (*Pennisetum clandestinum*) is being distributed by means of cuttings, as it does not form seed. It spreads rapidly by underground runners and might be a dangerous weed in cultivated land. For certain of the poorer, barren soils it seems to be very desirable.—*N. J. Giddings.*

7587. ELLIOTT, G. R. B. **Cultivation of crops on peat or muck land.** Jour. Amer. Peat Soc. 18: 25-35. 1925.—Differences between upland and lowland bogs are discussed. Data on growth of different crops with water level at various depths, are given.—*G. B. Rigg.*

7588. FERNÁNDEZ GARCÍA, R. **Datos sobre hierbas forrajeras importadas recientemente.** [Hints on forage plants recently imported.] Porto Rico Insular Exp. Sta. Circ. 91. 1-19. 5 fig. 1924.—Descriptions are given of the forage grasses, Elefant (*Pennisetum purpureum*), Guatemala (*Tripsacum laxum*), Molasses (*Melinis minutiflora*), Dallis (*Paspalum dilatatum*), Natal (*Tricoloea rosea*), Johnson (*Holcus halepensis*), and Kikuyu (*Pennisetum clandestinum*). Chemical analyses and their relation to animal nutrition are given.—*J. I. Otero.*

7589. HAMPP ET AL. **Klima und Boden, die Grundlagen der Kartoffelzüchtung.** [Climate and soil, the basic factors in potato improvement.] Beiträge Pflanzenzucht 7: 55-64. 1924.—This discussion was led by Hampp at a meeting of agriculturists at Munich in June, 1924. Success with potatoes depends less on the development of new varieties than on selection and on perseverance with proved varieties. The most important factor to be considered is climate; then soils; and lastly, culture. Soils best adapted for potato culture are described, also methods of handling soils. The effect of soil acidity and lime on potatoes is discussed. Varieties differ greatly in regional adaptation. Climatic, soil, and potato data are given for the 6 Bayern experiment stations, which are in a province with greatly varied climatic and soil conditions. On sour soils in northern Germany, *Rhizoctonia* is particularly damaging to the potato crop.—*W. B. Lydenburg.*

7590. HYSLOP, G. R. **Seed potato improvement.** Oregon Agric. Exp. Sta. Circ. 25. 1-8. 1 fig. 1922.—In order to emphasize the need for seed potato improvement in Oregon the author compares the average yield per acre in Maine with that of his own state. In 1921 Maine's average yield was 288 bushels as compared with 90 for Oregon. Further data is presented showing the 10-year (1912-1921) average acre-yield to be 210 bushels in Maine as against 118 in Oregon for the same period. The author believes that the difference in yield is due to



4 principal causes, namely: (1) Too many varieties, (2) unproductive hills, (3) poor stands, and (4) not enough plant food or moisture. Directions are given on how to improve seed as follows: (1) Use for seed only smooth, symmetrical, medium-sized tubers; (2) clip off the stem end of the potato and examine for stem-end discoloration; (3) treat all seed in a corrosive sublimate solution; (4) cut the potatoes to save the blossom-end piece; (5) coat the cut seed with land-plaster; (6) plant on clean land; (7) plant to get a stand; (8) keep fields clean of weeds; (9) rogue out all weak, sick, or diseased plants; and (10) harvest and store carefully.

—*W. Stuart.*

7591. KIESSLING, L. *Zur Problemstellung, Begriffsbestimmung und Methodik der Pflanzenzüchtung.* [The problems, definition, and methods of crop improvement.] *Beiträge Pflanzenzucht* 7: 11–21. 1924.—An address before a meeting of agriculturists at Munich in June, 1924, reviewing the subjects covered in the title.—*W. B. Lydenburg.*

7592. LÓPEZ DOMÍNGUEZ, F. A. *Fertilizer experiments on cane.* *Porto Rico Insular Exp. Sta. Bull.* 29. 3–39. 1924.—This is the result of very extensive experiments on the various types of cane soils throughout the island.—*Melville T. Cook.*

7593. LÓPEZ DOMÍNGUEZ, F. A. *The sugar yield of Uba cane in Porto Rico.* *Porto Rico Insular Exp. Sta. Bull.* 28 (*English and Spanish Editions*). 3–55. 1924.—This discussion of the origin, distribution and description of this variety includes extensive tables, giving character of land, age of crop, brix, sucrose, purity, and tonage. There is also a comparison of plant and ratoon cane.—*Melville T. Cook.*

7594. MAXWELL, FRANCIS. *Impressions of Queensland sugar industry.* *Australian Sugar Jour.* 16: 783, 785, 787. 1925.—Conditions governing the sugar industry in Queensland differ from those of all other sugar-producing countries of the world in that production is carried out exclusively by white labor and the Government exercises comprehensive control. The 2 schools in the science of milling are compared, together with their respective requirements—the one advocating pressure and the other believing primarily in opening up and thoroughly preparing the cane and subsequently applying judicious and intense maceration. The latter is regarded as the most economical and logical and is in vogue in Queensland, where it appears to be mainly responsible for the high extraction figures. The Queensland mills have no juice-weighing apparatus nor juice measuring tanks, while in Java every sugar factory is provided with one or both. It would be difficult to weigh juice in mills that have been applying the Petree or analogous process entailing circulation of the juice, but the author believes that many factories that have not adopted or that have discarded such processes would benefit in using juice scales.—*Nellie E. Fealy.*

7595. OPITZ. *Neuzeitlicher Roggenbau.* [Contemporary rye growing.] *Landw. Hefte* 53–54. 1–43. Paul Parey: Berlin. 1925.—The author treats of the importance of rye growing; adaptations, morphology, and growth of the plant; its place in rotations; fertilization; soil preparation; varieties; characteristics of good seed; treatment of seed before sowing; sowing; cultivation; protection of the growing crop; cutting and harvest; and summer rye.—*W. B. Lydenburg.*

7596. PAGE, R. L. *Implement tillage for irrigation.* *Jour. Dept. Agric. Porto Rico* 8<sup>2</sup>: 16–21. 1924.—This paper was read before the Association of Sugar Technologists of Porto Rico in June, 1924.—The author gives a general discussion of this subject with special reference to the conditions existing on the south coast of Porto Rico.—*Melville T. Cook.*

7597. PARR, P. H. *The mechanical theory of sugar boiling and curing.* *Internat. Sugar Jour.* 27: 83–88. 1925.—In this, the 2nd part of the article, the ratio is introduced in connection with the question of the concentration to which a massecuite must be boiled in order to yield a sugar of given purity by straight curing without washing. Calculations of various ratios are illustrated by charts and the results when applied to various methods of boiling and curing are considered. Diagrams are given showing the results of calculations made for 3 of the simpler boiling and curing schemes for a syrup of 0.85 purity and 0.55 solids, with sugars cured at 70, 60, and 50°C., respectively, to purities of 0.97, 0.93, and 0.89.—*Nellie E. Fealy.*

7598. RANGANATHA RAO, M. S. *Tomatoes and how to grow them.* *Jour. Madras Agric. Students Union* 12: 199–201. 1924.—Cultural directions are given for the outdoor production of tomatoes from seed, which includes the laborious process of excavating holes to a



depth of 18 inches for each individual plant. These holes are filled with a mixture of loam, leaf soil or very old manure. Plant lice and red spider are mentioned as insect pests, and leaf-rust, flower-rot and a wilt as diseases. The author gives data showing the cost of cultivating  $\frac{1}{4}$  acre of tomatoes.—*W. Stuart.*

7599. RICHARDSON KUNTZ, P. *Estudios comparativos de las cañas Kavangire, Zuinga y Cayanna 10.* [Comparative studies of the canes Kavangire, Zuinga and Cayanna 10.] Porto Rico Insular Exp. Sta. Circ. 73. 1-11. 2 fig. 1923.—Description is given of these 3 sugar cane varieties all of which have been found immune to mosaic disease. Tables of chemical analysis for comparison are given.—*J. I. Otero.*

7600. ROSENFELD, ARTHUR H. *The Java P. O. J. canes in Tucumán and Porto Rico.* Jour. Dept. Agric. Porto Rico 83: 1-87. 1924.—The author, formerly Director of the Sugar Exp. Sta., Tucumán, Argentina, and now Special Technologist at the Insular Exp. Sta., Rio Piedras, traces the work of the former station with P. O. J. 36, 105, 213 and 234 seedlings, all crosses of Chunnee and Cheribon or Striped Preanger, made by Kobus in Java. In experimental competition with some 400 imported varieties after 5 years of trials the superiority of P. O. J. 36 and 213 over all other varieties has been proved even though 100% were mosaic-infected, and these canes are being rapidly extended over the 200,000-acre cane area of the Province, replacing the badly infected and rapidly degenerating native (Louisiana Striped and Purple) canes. These canes were sent from Tucumán to Porto Rico in 1915, but little attention was paid to them until Earle reported their remarkable tolerance to mosaic. After 1918 they began to be widely adapted in the worst mosaic (yellow stripe) sections; particularly on the west coast, where they are giving excellent results. As in Tucumán, P. O. J. 36 and 213 seem superior in Porto Rico, followed by P. O. J. 234 and, finally, by P. O. J. 105, although at present the largest area of these canes in Porto Rico is in the latter variety. In Appendix A, fiber content of the canes is discussed; Appendix B contains technical descriptions of each variety, and Appendix C is an annotated bibliography of 215 entries.—*Melville T. Cook.*

7601. SANKARAN PILLAI, K. *Curing Virginian and country tobacco in Guntur district.* Jour. Madras Agric. Students' Union 12: 337-343. 1924.—The great increase in cigarette smoking in recent years has created a demand for leaf tobacco of yellow color in addition to the older cigar tobacco. On the basis of 4 years' experimentation, methods are described for curing the local variety and the Virginia Orinoco for production of cigarette leaf and for curing the native type and Kentucky White Burley in the production of cigar leaf. Methods of growing and harvesting are also briefly outlined. In producing cigarette tobacco, light soils, judiciously manured, are used. Early planting and high topping should be practiced. In curing, the leaves are first yellowed indoors, after which the process is completed out of doors in direct sunlight. For production of cigar tobacco, rich, heavy soils, well manured, are required; the plants are topped low; harvest is delayed until the leaves are fully ripe. The leaves of the native variety are cured in direct sunlight but the Burley must be cured indoors. In the culture of Burley, raising the seedlings is a difficult matter.—*W. W. Garner.*

7602. SIERP, H., ET AL. *Die Bedeutung der modernen Bestrebungen der Pflanzenphysiologie für die Pflanzenzüchtung.* [The significance in crop improvement of the modern trend of plant physiology.] Beiträge Pflanzenzucht 7: 22-32. 1924.—This discussion was led by Dr. Sierp, at a meeting of agriculturists at Munich in June, 1924. Instances of varietal, physiological differences in plants are given, including differences in carbon dioxide emission of seed, chlorophyll content of plants, winter hardiness, drought resistance, and sugar content of seedlings.—*W. B. Lydenburg.*

7603. SMITH, H. GRAHAM. *Supplementing pollen supply for bees in spring.* Agric. Gaz. New South Wales 35: 899-900. 1 fig. 1924.—Two trees, *Juniperus virginiana* and *Celtis australis*, have been found valuable in supplementing spring pollen supplies.—*L. R. Waldron.*

7604. STÖRMER. *Saatzuchtfragen im Hülsenfruchtbau unter besonderer Berücksichtigung der Lupine.* [Seed production questions in legume culture with especial reference to lupines.] Mitteil. Deutsch. Landw. Ges. 40: 254-260. 1925.—In this address the speaker called attention to the best varieties of peas and lupines for field culture, especially in view of the serious protein shortage in German crops.—*A. J. Pieters.*

7605. "STUDENT." *On testing varieties of cereals.* Biometrika 15: 271-293. Diagr.



1-3. 1923.—This is a critique of planning field trials to reduce variations due to soil. Three methods are available: (1) Large plots repeated many times. This method is practicable only in coöperative experiments, usually under government supervision. (2) Small plots. Beaven used plots of 1 square yard each, surrounded by a border of the same variety, distributed on a regular system to equalize the positions of different varieties. The variance of comparison of 2 races in a field containing  $m$  races each, sowed in  $n$  plots is:  $\frac{2m(\sigma_T^2 - \sigma_R^2 - \sigma_G^2)}{(m-1)(n-1)}$  where  $\sigma_T^2$  = total measured variance,  $\sigma_R^2$  = measured variance of means

of races, and  $\sigma_G^2$  = measured variance of means of groups.—(3) The half-drill strip-method combines advantages of large and small scale work. Methods (2) and (3) depend on correlation of yields from adjacent plots.—*J. R. Miner.*

7606. TEMPLETON, JAMES. *Ratoon cotton in Egypt.* Ministry Agric. Egypt Tech. & Sci. Ser. Bot. Sect. Bull. 55. 1-14. 1 pl. 1925.—The cotton plant was first cultivated on a commercial scale in Egypt about the year 1821, as a perennial. Some years later the annual method was adopted by some cultivators. This change apparently occurred first on the better lands, probably due to irrigation difficulties rendering cotton an unprofitable crop in comparison with wheat, maize and millet. The better cultivation obtained by treating the plant as an annual may also have been partly responsible for this change. The perennial method of cultivation persisted over large areas, until 1912 when it was prohibited by the Government. This action was taken because it was believed that if the plants were left in the ground for more than 1 year, they would harbor insect pests during the winter. The statement frequently met with, that the cultivation of ratoons was given up because of the inferior quality of the lint produced, is not supported by evidence. The results of a preliminary experiment appear to indicate that: ratooned plants (variety Sakellarides) in their 2nd year give a higher yield than in their 1st; the quality of the 2nd year's lint is at least not inferior to that produced in the 1st year (though until the opinion of expert graders, who have been supplied with samples of both, comes to hand, this is not to be regarded as conclusively proved); the crop matures much earlier in the 2nd year than in the 1st; in the 2nd year, loss from boll-worm attack is not so great as in the 1st; and shedding of bolls, in proportion to flowers produced, is less in the 2nd year.—*From author's abstract.*

7607. WELLER. *Einiges über unsere Erfahrungen in der Züchtungstechnik bei Dauerfütterpflanzen.* [A few of our experiences in the development of perennial forage plants.] *Beiträge Pflanzenzucht* 7: 73-90. 1924.—This discussion was opened by Prof. Weller, at a meeting of agriculturists at Munich in June, 1924. He describes in some detail the methods in use at the Bayern Exp. Sta. since February, 1912, in the testing of new forage plants, from the time the plants are started in the greenhouse through their handling in the cold-frames and transferring to field plots; and the practices and methods adopted in the selection and extension of promising plants. He then discusses the history of the more important perennial forage plants developed at the station, and their characteristics and values. Grasses and legumes (chiefly red clover and alfalfa) are considered. Talks by agriculturists from other stations throughout Germany followed along the same lines, and included a discussion of alfalfa.—*W. B. Lydenburg.*

7608. WREDE. *Erfahrungen aus der Praxis der Lupinenbaues.* [Practical experiences in lupine culture.] *Mitteil. Deutsch. Landw. Ges.* 40: 260-263. 1925.—An address in which the speaker gives his personal experiences on the various phases of lupine growing.—*A. J. Pieters.*

#### SOIL SCIENCE (EDAPHOLOGY)

7609. HARDY, F. *Mauritian pen manure.* *Internat. Sugar Jour.* 27: 91-93. 1925.—The 2 main components of pen manure are animal secretions and litter, and the most important part of the former is urine, which contains not only compounds of immediate fertilizing value, but furnishes nitrogen to the organisms that bring about decomposition of the cellulose of the litter. Four main factors control the rapid multiplication of the more effective bacteria capable of decomposing cellulose: an adequate supply of air, adequate moisture, sufficiency of inorganic or simple organic nitrogen compounds, and absence of certain specific toxins, such as reducing sugars and higher organic nitrogen compounds. In the absence of an ade-



quate supply of nitrogen, deficiencies may be made up by the activity of certain nitrogen-fixing bacteria, which can thrive on the first-formed decomposition products of cellulose, provided these products include readily oxidizable substances, so that these bacteria may work in conjunction with the cellulose-decomposing organisms and thus augment the initial supply of suitable nitrogenous material in the medium. The soundness of a practice advocated by certain Mauritian planters for increasing the output of pen manure on sugar-cane estates has been confirmed by Rothamsted researches. The author gives details of the methods.—*Nellie E. Fealy.*

7610. HISSINK, D. J. Der Sättigungszustand des Bodens. A. Mineralböden (Tonböden). [The saturated condition of soils. A. Mineral soils (clay soils).] Zeitschr. Pflanzenernähr. u. Düngung 4: 137-158. 1925.—The author considers the clay substances as well as the humus to be of the nature of weak acids. Methods to determine the total base absorbing power and the degree of saturation of a soil are described.—*F. M. Schertz.*

7611. KAPPEN, H., UND K. BOLLENBECK. Über die Bedeutung der Aziditätsformen der Böden für das Löslichwerden schwerlöslicher Phosphate. [The significance of types of soil acidity for the solubilization of difficultly soluble phosphate.] Zeitschr. Pflanzenernähr. u. Düngung 4: 1-29. 1925.—The work includes experiments with precipitated tricalcium phosphate, with humus acids and phosphorus compounds, with silicic acid and tricalcium phosphate, and experiments on acid exchange with permutite and soils.—*F. M. Schertz.*

7612. LOEW. Das physiologische Verhalten der Pflanzen gegen Reizwirkungen. [The physiological behavior of plants to stimulation.] Beiträge Pflanzenzucht 7: 65-72. 1924.—Examples are given of the stimulation of plant functions by means of chemicals ordinarily toxic when used to treat seed and also as soil amendments (salts of aluminum, borax, calcium iodide, sodium fluoride, salts of manganese, and chlorophenol mercury). Stimulating effects are recounted in the case of oats, spring wheat, tobacco, and sugar beets. Where results with the use of the chemicals as soil amendments are discussed, various crops (not specified) were used in the experiments. Of inorganic chemicals, only salts of manganese and iron, and sodium iodide and sodium fluoride appear to have agricultural value, when cost is taken into consideration.—*W. B. Lydenburg.*

## BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

CARROLL W. DODGE, *Editor*

CHARLES A. WEATHERBY, *Assistant Editor*

(See also in this issue Entries 7928, 7929, 8166)

7613. ANONYMOUS. Carl Ladewig. Tropenpflanzer 23: 12-14. 1920.—Carl Ladewig who took active part in various matters in tropical agriculture, died January 11, 1920.—*J. C. Th. Uphof.*

7614. ANONYMOUS. David Douglas—botanist. Timberman 26<sup>s</sup>: 49. 1 fig. 1925.—This is a brief account of botanical explorations in Washington, Oregon and California.—*Duncan Dunning.*

7615. ANONYMOUS. Ferdinand Wohltmann. Tropenpflanzer 22: 101-103. 1919.—Ferdinand Wohltmann died April 10, 1919. He was co-editor of Der Tropenpflanzer, author of the "Handbuch der Tropischen Agrikultur" and other works.—*J. C. Th. Uphof.*

7616. BIRS, PAUL. L'Herbier cryptogamique de Bory de Saint-Vincent au Muséum. [Cryptogamic herbarium of Bory de Saint-Vincent in the Museum.] Bull. Mus. Hist. Nat. [Paris] 30: 417-422. 1924.—Bory de Saint-Vincent lived in the early part of the 19th century. By travel and exchange he built up a large herbarium, especially rich in cryptogams and aquatics. This herbarium was sold in 1847. The Paris Museum of Natural History purchased all material of *Isoetes*, Lycopodiaceae, Equisetaceae, and the ferns. The algae, lichens and hepatics were acquired by Thuret, and were later (1910) presented to the Museum by Bornet. The mushrooms, which went to Montagne, were bequeathed to the Museum in 1865. The mosses, which were procured by Germain, probably all returned to the Museum in 1903 with the Cosson Herbarium. With the exception of the Marsiliaceae, which went to Durieu, and



later to Motelay, the entire herbarium of Bory de Saint-Vincent is now possessed by the Museum.—*John M. Fogg, Jr.*

7617. GHIOVENDA, E. *Flora delle Alpi Lepontine Occidentali. Supplemento alla Bibliographia.* [Supplement to the bibliography of the Flora of the Western Lepontine Alps.] *Nuovo Gior. Bot. Italiano* n.s. 31: 275–322. 1924.—A list of works by 155 authors, bearing on the subject, with biographical and other notes.—*P. D. Caldis.*

7618. HUARD, V.-A. *L'Abbé Provancher. IX. Les Voyages de L'Abbé Provancher en Amerique.* *Nat. Canadien* 51: 137–141. 1924; 51: 161–168, 183–191, 211–215, 235–240. 1925.—An instalment of a biographical sketch of the great Quebec naturalist who was the founder of "*Le Naturaliste Canadien.*"—*A. H. MacKay.*

7619. J[ACKSON], B. D. *Obituary notices.* *Proc. Linn. Soc. London* 135: 36–46. 1923.—Brief biographical sketches are given of the following: Isaac Bayley Balfour, Gaston Eugène Marie Bonnier, William Carruthers, William Cole, Henry John Elwes, John Henry Gurney, William Henry Pearson and Frederic Newton Williams.—*Frederick V. Rand.*

7620. LANZONI, FRANCESCO. *Tommasso Luigi Berta, fitotomo parmigiano (1783–1845).* [Tommasso Luigi Berta, anatomist from Parma.] *Ann. Bot.* 16: 224–239. 1924.—The writer worked with the skeletons of leaves.—*P. D. Caldis.*

7621. S[ETCHELL], W. A. *Townshend Stith Brandegee.* *Science* 61: 464. 1925.—This records the death on April 7, 1925, of the Honorary Curator in the Herbarium of the University of California, a student of the flora of California.—*C. J. Lyon.*

7622. SSE-MA-KUANG. *Ein altchinesischer Garten.* [An ancient Chinese garden.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 155–157. 1924.—A citation is given from *MAY* (Am stillen Ozean, p. 280) who gives a description of the work and views of Sse-ma-kuang (1300 A.D.) on his garden, as it affected his body and mind and the beauties which a garden offers to the environment.—*J. C. Th. Uphof.*

## BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

ARTHUR H. GRAVES, *Assistant Editor*

(See also in this issue Entries 7785, 8019, 8042)

7623. ANONYMOUS. *List of seeds collected during the year 1924 and offered in exchange.* *Brooklyn Bot. Gard. Rec.* 14: 1–19. 1925.

7624. ABROMEIT. *Der Botanischen Garten der Albertus-Universität zu Königsberg i.Pr.* [The botanical garden of Albertus-University of Königsberg.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 28–33. 1922.—The botanical garden was erected in 1809. Friedrich Schweigger was the 1st botanist in charge. The further development of the garden is being discussed.—*J. C. Th. Uphof.*

7625. CAMPBELL, DOUGLAS HOUGHTON. *Some suggestions on classification.* *Science* 61: 403–405. 1925.—The present system of classification in use in most text-books is antiquated. Brief mention is made of the several systems published up to 1909 and the worth of the many sub-kingdoms used is evaluated by the writer. Finally, a scheme is offered that uses the 4 sub-kingdoms, Protophyta, Algae, Fungi, and Embryophyta. Protophyta would include the classes, Myxomycetes, Flagellata and Schizophyta. The algae and fungi would each contain their generally accepted subdivisions as classes, with the lichens under the fungi. Under Embryophyta the subdivisions would be Bryophyta, Pteridophyta and Spermatophyta. A class Anthoceroles ranks with Hepaticae and Musci while the class Psilotineae ranks with the customary classes of Pteridophytes. Under the Spermatophyta the classes would be Cycadophyta, Coniferae, Gnetales and Anthophyta (Angiosperms).—*C. J. Lyon.*

7626. DRIESCH, HANS. *Philosophie des Organischen.* [Philosophy of the organic.] 2d. ed. 608 p. 14 fig. Wilhelm Engelmann: Leipzig, 1921.—Many changes and additions are



everywhere made in comparison with the 1st edition. The phylogenetical problem has been considerably expanded. The latter part of the work is purely philosophical, and has been entirely rewritten; it bears much in relation to metaphysics. An introduction gives the philosophical methods, some peculiarities of scientific biology, the 3 different types of our knowledge of the concept of informations, and general characteristics of the organic form. Part A mentions the principle occurrences of analytic biology: (1) Elementary morphology; (2) experimental and theoretical form-physiology; (3) adaptation; (4) inheritance; second proof of the autonomy of life; and (5) forms and origin of variation and heredity. Regarding the organic world as a whole the writer discusses (1) the principles of taxonomy and (2) evolution. A special part is devoted to a philosophical consideration of organic movements. —Part B takes up the philosophy of the organic, including the concepts of natural philosophy, and teleology, characteristics of entelechy, entelechy and causality, and entelechy and substance. The part on direct justification of the teaching of entelechy includes (1) biology and psychology, and (2) vitalism and logic.—The last 2 chapters are entirely devoted to super-natural problems and metaphysical conceptions.—*J. C. Th. Uphof*.

7627. FONTANEL, P. *La mutualité en histoire naturelle*. [Cooperation and reciprocity in natural history.] *Nat. Canadien* 51: 217–221. 1925.—“There should be an arrangement for cooperation between institutions which teach natural history, and that bond of union should be “Le Naturaliste Canadien.” The advantages of such an arrangement are pointed out under several heads.—*A. H. MacKay*.

7628. GAGER, C. STUART. *Fourteenth annual report of the Brooklyn Botanic Garden, 1924*. *Brooklyn Bot. Gard. Rec.* 14: 21. 1925.

7629. HARTWIG, KARL GUSTAV. *Ein neues Arbeitsfeld*. [A new field of work.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 294–299. Those interested in dendrology should carefully observe interesting trees which occur in parks, forests, cemeteries, avenues, etc. It frequently happens that such places contain very rare specimens, and some may produce peculiar malformations; such instances should become known. Activities should also be directed to stimulating the laying out of new parks and to the protection of certain trees or of whole areas. The immediate surroundings should be taken up first, explored, and interesting objects mapped.—*J. C. Th. Uphof*.

7630. HAUPT, A. W. *The stem of Magnolia as a laboratory type*. *Science* 61: 469. 1925.—The stem of *Magnolia grandiflora* has been found to have all the desirable characteristics for illustrating the general cellular structure of the woody, dicotyledonous stem; it is generalized and the several types of tissues are clearly represented.—*C. J. Lyon*.

7631. HEUSER, OTTO. *Die wissenschaftlichen Grundlagen der Pflanzenernährung*. [The scientific principles of plant nutrition.] 135 p. 4 fig. Gebrüder Borntraeger: Berlin, 1924.—This small work is written with the object of presenting to the student and to the practical agriculturist a brief, general outline of plant nutrition, considering the subject in its broader aspects. After a general account of the requisite nutrients furnishing the essential elements or compounds, special chapters are devoted to the following: (1) The building of plant substances, (2) the soil in relation to plant nutrition, (3) the requirements of particular plants, (4) tillage and fertilization, and (5) the laws relating to plant nutrition.—*B. M. Duggar*.

7632. MULLEN, MARY. *The Barnes Foundation: An experiment in education*. *Jour. Barnes Foundation* 1: 1–8. 1925.—The Barnes Foundation, chartered as an educational institution by the State of Pennsylvania, December 4, 1922, is located in Merion, a suburb of Philadelphia. Its buildings are in a park of 12 acres and “plans are already far advanced for the use of this arboretum as a part of the educational program of the foundation. The establishment of a professorship in arboriculture and horticulture has been decided upon.” The arboretum “contains the famous collection of rare and specimen trees developed during forty-five years by the Director of Arboretum, Joseph Lapsley Wilson. This is now available to qualified students of arboriculture. In addition there is a department of floriculture under the direction of Laura L. Barnes and John W. Prince, in which research is conducted in the development of new species of flowers and plants. The department is also available to classes desiring to make special studies in that field.”—*C. S. Gager*.

7633. PERONA, V. *Das Arboretum von Vallombrosa bei Florenz*. [The arboretum of



Vallombrosa near Florence.] Mitteil. Deutsch. Dendrol. Ges. 29: 149-151. 1920.—This arboretum was started in 1870 under the direction of Adolfo di Berenger. Vallombrosa is situated on a high plateau in the Apennines of Tuscany.—*J. C. Th. Uphof.*

7634. TEUSCHER, H. *Morton Arboretum: Bulletin of popular information.* 1. 1-4. [Lisle, Illinois]. 1925.—This 1st number of a new serial is a 4-page leaflet issued April 22, 1925. The introduction states that the Bulletin "proposes to give an account of the plants of common interest which flower in the Morton Arboretum" (founded by Jay Morton), and to give the public information as to the hardiness of plants tested there. The present number contains notes about many trees, shrubs, and wild herbaceous perennials.—*C. S. Gager.*

## CYTOLOGY

GILBERT M. SMITH, *Editor*

(See also in this issue Entries 7789, 7790, 7799, 7858, 7909, 7918, 7919, 7925, 7943, 8070)

7635. BRAMBELL, F. W. ROGERS. [REV. OF: DONCASTER, L. *An introduction to the study of cytology.* 2d ed. xiv + 280 p. 24 pl. Univ. Press: Cambridge, 1924.] *Nature* 115: 224. 1925.—The book is written from the standpoint of "pointing out some of the ways in which cytological investigation is related to the great fundamental problems that lie at the root of all biological research." Following the introductory chapter on the cell there is a chapter dealing with the various cell organs (nucleus, mitochondria, and Golgi apparatus). The 3rd chapter on cell division is followed by one discussing the centrosomes, spindle, and the asters. Chapters 5-8 discuss spermatogenesis, oogenesis, and the union of these gametes. Succeeding chapters are devoted to parthenogenesis and artificial parthenogenesis. The remaining chapters are devoted to the biological application of cytological phenomena. The topics treated include: The cytological basis of sex determination, germ cell determinants, the theory of the individuality of the chromosome, the mechanism of heredity, and the role of the cytoplasm in development and heredity. The papers cited are listed at the end of the work but this bibliography makes no pretension to completeness.—*Gilbert M. Smith.*

7636. DANGEARD, P. A. *La structure des Vauchéries dans ses rapports avec la terminologie nouvelle des éléments cellulaires.* [The structure of *Vaucheria* in its relation to the new terminology of cellular elements.] *Cellule* 35: (Vol. Jubilaire V. Grégoire, Ire partie) 239-250. 1 pl. 1925.—The author opposes the conception of the "chondriome" in which nearly all the metabolism of the plant is under the influence of mitochondria. According to his views there are 3 categories of structures: (1) Plastidome, composed of plastids (sphaeroplasts, discoplasts, or mitoplasts, according to their form); (2) cytome (formerly the sphaerome of the author) composed of cytosomes (sphaerosomes and mitosomes); (3) vacuome, either ordinary vacuoles, elementary vacuoles, or metachromes (sphaerochromes and metachromes). The colloidal solution of metachromatin can be precipitated in vacuoles in the form of metachromatic corpuscles that are colored black by iron alum haematoxylin in the same manner as the plastids and the cytosomes. The author applies this terminology to the study of *Vaucheria* in the manner that he has previously used it in connection with *Marchantia polymorpha*. (See Bot. Absts. 14, Entry 128). He shows the disagreement between his own observations on the algae and those of Mangenot (1922).—*J. Beauverie (Translated).*

7637. FIELD, J., 2ND, AND C. L. ALSBERG. *A study of the birefringence and the staining of agar-agar and of gelatine.* *Jour. Biol. Chem.* 63 [Proc.]: XLII. 1925.—Both agar-agar and gelatine dried in the gel form are very strongly birefringent, whereas dried in the sol form they are not birefringent at all except somewhat at the periphery or at the edges of a crack. The dried agar gels were quickly and deeply stained by alcoholic solutions of many of the dyes used in cytological studies, whereas the dried sols stained slowly if at all. It is suggested that this phenomenon may be significant in cytological work.—*G. B. Rigg.*

7638. HÅKANSSON, ARTUR. *Beiträge zur Zytologie eines Epilobium-Bastardes.* [Contributions to the cytology of an *Epilobium* hybrid. *Bot. Notiser* 1924: 269-278. *Fig. 1-23.* 1924.—A detailed account is given of meiosis in a hybrid between *Epilobium hirsutum* and *E. montanum*. The chromosome number is probably 36. In pollen mother cells, chromatin



threads formed from the reticulum, with probably a zygotene pairing of the threads, and clearly a longitudinal division which proceeded irregularly. During the 2nd contraction a looping of the threads occurred, and the author thinks that parasynapsis occurred. During early diakinesis the chromosomes were often unevenly distributed, but later formed normally at the equatorial plate. Both heterotypic and homotypic divisions appeared practically normal. The generative cell varied in size; when small, it often formed a wall about itself and did not enter the tube. *E. hirsutum* had many empty pollen grains. In the hybrid, all pollen grains were dead. Reduction in the embryo-sac mother cell was regular. In the development of the embryo sac there was irregularity in the development of the egg apparatus; the synergids often varied in size and were often vacuolated. Likewise the development of the egg was irregular. The influence of hybridization first makes itself apparent during the last stages of pollen development and during the later stages of development of the embryo sac.—H. K. Svenson.

7639. KISSER, J. Ueber eigenartige organische Membraneinschlüsse in der Epidermis von *Portulaca Gilliesii* Hook. [A peculiar organic inclusion in the epidermis of *Portulaca Gilliesii* Hook.] Oesterreich Bot. Zeitschr. 74: 115-122. 1925.—In longitudinal sections of the epidermis of the stem of *Portulaca Gilliesii* there are often found local swellings of more or less elliptical shape that have a high refractive power. It was thought at first that these were due to mineral inclusions, but all determinations were negative. The inclusions are organic in nature. They are colored brown by treatment with sulphuric acid. With zinc chloriodide they are colored a shiny yellow in the same manner as the cuticle. Tests for lignification are negative. Boiling with concentrated  $H_2SO_4$  dissolves both the inclusion and the cuticle. Treatment with 50% KOH gives an intense yellow color, there is some swelling and on warming there is saponification. These inclusions appear to be identical with the cuticle. They are found only in the epidermal cells of the stem and are lacking in the epidermis of the leaf, calyx and corolla. The inclusions are absent in 20 other species of *Portulaca* investigated as well as in the single species studied of each of 14 other genera of the family. Similar inclusions have been found by Schips in the epidermis of the fruit of *Rhodesia japonica* and by Voechting in certain of the Cactaceae.—H. Cammerloher (Translated).

7640. LLOYD, FRANCIS ERNEST. The mode of occurrence of tannin in the living cell. Jour. Amer. Leather Chem. Assoc. 17: 430-450. Fig. 1-16. 1922.—(Reprinted without re-paging as McGill Univ. Publ. Ser. II. 12. 1922).—Following a general discussion setting forth the cytological relations of tannin both historically and as at present understood, the results of the study of the bark of the California tanbark oak (*Quercus densiflora*) are given. It is found that in the tannin-bearing cells of the secondary cortex the tannin is associated with a 2nd substance, an emulsoid, which, under certain conditions, sets as a firm gel. It is shown that while the gel in question differs in certain respects from the carbohydrate gel which adsorbs the tannin in the fruit of the persimmon (concerning which the author's views have been supported by Japanese workers), banana, etc., the relation of the tannin to this substance in the tannin-cells of the oak is the same, namely, the emulsoid material holds the tannin as an adsorption complex in the central vacuole. The same relation is also found in the embryo of the oak (*Quercus laurifolia*) and in *Eriogonum*.—Author.

7641. [NADSON, G. A., AND B. V. PERFILIEV.] Надсон, Г. А., и Б. В. Перфильев. О строении протопласта *Achromatium oxaliferum* Schew. [Protoplasmic structure of *Achromatium oxaliferum* Schew.] Известия Главного Ботанического Сада. Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. République Russe] 22 (Suppl. I): 25-32, 38-40. Pl. 7 (col.). 1923.—In the living as well as in the fixed and stained condition, the protoplast of *Achromatium oxaliferum* showed a beautiful alveolar structure. In the lacunae were found calciferous globules, and in their partition walls small droplets of sulphur. Intra-vitem staining with weak methylene blue showed the "central-body," which was brought out still more distinctly in fixed and stained material. It exists in the form of very small granules which take the stain more intensely than the surrounding plasmatic layer. This central-body differs also in density but is rarely sharply delimited, at the margin, from the cytoplasm. Around it the metachromatic granules are distributed, though sometimes they are disseminated throughout the cell. Fixation by the methods of Bütschli, Farmer or Pfeiffer followed by Delafield's hematoxylin and differentiation by acidulated alcohol, or by Heidenhain's iron-alum-hematoxylin, gave particu-



larly good results. Independently of the method used, the preparations all showed structures analogous to the living material stained with methylene blue. The microstructure was shown to be alveolar in the sense of Bütschli, but deformed by the deposition of calciferous granules. After dissolution of the latter the lacunae retain their form and size and correspond to the vacuoles but are of secondary origin.—The protoplasmic structure in *Achromatium* is of the same type as in *Beggiotoa* and *Throthrix* or in the *Cyanophyceae*, showing a differentiation into a central-body and cortical cytoplasm. The central-body is considered as a so-called "diffuse nucleus" equivalent to the vesicular nucleus of higher forms. (See following entry.)—*Frederick V. Rand.*

7642. [NADSON, G. A., AND S. M. VISLOUKH.] Надсон, Г. А. и. С. М. Вислоух. **Строение и жизнь гигантской бактерии *Achromatium oxaliferum* Schew.** [Structure and biology of the giant bacterium, *Achromatium oxaliferum* Schew.] Известия Главного Ботанического Сада Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. République Russe] 22 (Suppl. I): 1-24, 33-37. Pl. 6 (col.). Fig. 1-8. 1923.—*Achromatium oxaliferum* was found not only in fresh water but also in brackish and even in sea water in various parts of Russia. Material for this study came from the vicinity of Petrograd and from the Gulf of Hapsal (Esthonia). The organism is a large unicellular bacterium ( $7 - 36 \times 7 - 102\mu$ ) usually cylindrical in form but sometimes elliptical or even spherical. Most of the cells possess a transparent gelatinous envelope of varying thickness, and progress by a slow, gliding movement. Organs of locomotion have not been demonstrated but the motility resembles that of *Beggiotoa* and the *Cyanophyceae*.—There are 2 types of cell inclusions: Certain globules are composed of calcium combined, according to Scheiwiakoff, with oxalic acid, according to West and Griffiths, and Bersa, with carbonic acid. These calciferous globules usually occur in large numbers and by reciprocal pressure often assume a polyhedral form; they occupy the vacuoles (alveoli) and after their dissolution the protoplast shows a beautiful alveolar structure.—The 2nd type of inclusion consists of small droplets of S, the presence or absence of which seems to depend on the presence or absence of  $H_2S$  in the surrounding medium. Sulphur probably plays the same role as in the sulphur bacteria in general, but the physiology of the calciferous globules has not yet been explained. The authors' observations and experiments on *Achromatium*, both in the laboratory and under natural conditions, have demonstrated a relation between  $O_2$  supply and presence or absence of these inclusions. With lowering of the  $O_2$  pressure the number and size of these granules diminish and the quantity of S increases, and vice versa. The authors believe that in the presence of  $H_2S$  with concomitant lowering of the  $O_2$  supply, *Achromatium* absorbs  $H_2S$  as the oxide and deposits S in the cell, deriving thus a certain quantity of energy in place of that otherwise obtained through oxidation of organic compounds with resulting deposition of calciferous globules. In either case the cell inclusions are thus allied directly to the respiratory process.—These inclusions also play a biological role, by their weight causing the cells to sink in the water.—The optimum for growth is  $10-12^\circ C$ . but much lower temperatures are endured. High temperatures are unfavorable; at  $28^\circ$  the cells rapidly degenerate, with involution forms and gradual death. Reproduction occurs only through simple transverse division but there are 2 types—one in which the axes parallel that of the mother cell; the other, in which the axes are at right angles to that of the parent cell. The latter type is characteristic chiefly of the elliptical cells.—In spite of the diversity in form and size the authors retain the single specific name, *A. oxaliferum* Schew, proposing, however, the new forms *minus* (= *Hillhausia palustris*), *medium*, *majus* (= *Hillhausia mirabilis*), *elongatum*, and *gigas* which are described in the Russian text.—With the genus *Thiophysa*, *Achromatium* belongs to the family Achromatiaceae which, from both morphological and cytological considerations, approaches the Beggiatoaceae. *A. oxaliferum*, together with *Microspira vacillans* and the purple bacteria, belong to the physiological group of sulphocalciferous microorganisms.) (See preceding entry.)—*Frederick V. Rand.*

7643. NASSONOV, D. **Recherches cytologiques sur les cellules végétales.** Arch. Russes Anat. Histol. et Embryol. 21: 95-127. 1918.—Nassonov has attempted to apply to botanical material some of the newer methods in use by zoological cytologists, but thus far practically unrecognized by botanists. Most interesting results were obtained by the method of Kolatchev, which involves a preliminary fixation in Champy's fluid, followed, after thorough washing in running water, by impregnation with osmic acid in an incubator for periods up to a



week. This method has recently been shown to demonstrate the Golgi apparatus in animal cells with unusual precision. In Nassonov's experiments, however, no equivalent of the Golgi apparatus was made visible. Instead, working with the root-tip meristem of *Vicia Faba*, he obtained 2 types of result, which always recur when sufficient trials are made, but which can not be individually produced at will. In one case, and most commonly, only the kinoplasm (fibrillar structures of the mitotic phenomena) was selectively blackened; while in the other case only the mitochondria were blackened. Rarely both materials impregnate simultaneously.—The 1st problem attacked was that of the centrosome, so long disputed in the higher plants. In resting cells the so-called kinoplasm or fibrillar protoplasm is especially accumulated around the nucleus in the form of a dense and heavily blackened fibrous layer. When mitosis begins, this layer separates into 2 portions which are gradually concentrated at opposite poles of the nucleus—the familiar polar caps. From these caps fibres gradually push out into the nuclear area to make connections with the developing chromosomes. The specific manner in which these traction fibers are blackened enables one to trace their development and thus to demonstrate their cytoplasmic affinities. Meanwhile at the spindle poles the kinoplasm forms 2 rather compact spheres which are actually fibrillar in structure. In polar view these spheres are often seen to have a "pin-wheel" appearance, the fibers curving out from the center to become continuous with fibrillae of the protoplasmic background. The spheres have some resemblance to the attraction sphere of animal cells, but Nassonov believes that they have nothing in common, and in the case of the plant cell the sphere does not contain a centrosome. He applies to this structure the name of "attraction fibro-sphere." The traction fibers, selectively blackened with osmic acid, are actually found to be made up of many exceedingly delicate fibrils united to form a rather bulky cable, which has the form of a tube. They seem to be very different from the spindle fibers proper, which do not blacken with osmic acid. Each traction fiber passes from one of the attraction fibro-spheres to one of the daughter chromosomes where it is attached by a "contact plate"—the expanded end of the fiber. Since each daughter chromosome has but a single such traction fiber, the chromosome number can be readily determined by counting the cross-sections of the fibers when cut in the proper plane. As the chromosomes diverge in the anaphase, the traction fibers are gradually taken up into the attraction fibro-spheres, which at the end of mitosis gradually spread out over the nucleus and regain their original (resting) appearance. Nassonov seems inclined to consider these fibers as real traction fibers in the old sense of Van Beneden, a view which is not at present acceptable to animal cytologists in general. Similar results were obtained with a variety of other plants. The interest of this description centers in the remarkable demonstration by osmic acid of structures which are at best indefinitely stained by orthodox methods.—In the other type of impregnation, the mitochondria alone are blackened selectively. In root-tips of *Vicia Faba*, *Pisum sativum* and *Salix fragilis*, the mitochondria occur in the form of thick threads which are scattered through the cytoplasm in rather limited number. During the prophase these threads assemble in 2 quite distinct groups around the attraction fibro-spheres. As the anaphase commences, the groups begin to break up again and eventually resume the former scattered condition. In this remarkable manner the mitochondrial material of these somatic cells is approximately halved at each cell division, and that apparently by a well-ordered distribution of the undivided individual threads. Finally, the relation of mitochondria to plastid formation was studied, especially in the root of *Pinus silvestris*. The material was fixed in Champy, post-chromed for several days in a solution of 3% bichromate of potassium, and finally stained with iron-alum-hematoxylin. In the youngest (central) part of the root, the mitochondria occur in the form of long delicate filaments. As one passes outward to the older cells, all stages in the transformation of the threads into plastids can be found. These bodies are first indicated by swollen areas along the mitochondrial threads, in which vacuoles appear and gradually grow larger. Eventually the thickenings separate and form a number of independent plastids loaded with clear vacuoles, which represent the unstained starch granules. By fixing in Flemming and staining with iodine, the reverse image is obtained, the starch granules being colored while the substance of the plastid itself is invisible. Thus, from each original mitochondrial thread several plastids arise, instead of a single one as has been found to be the usual case. Nassonov concludes that chondriosomes and plastids are one and the same thing,



the latter are only a more highly specialized product of the former.—It is hoped that these results will attract the attention of plant cytologists to a more serious consideration of the possibilities of the technical methods now being developed in great variety and with startling success by workers on the cytoplasm of animal cells.—*Robert H. Bowen.*

7644. PAINTER, THEOPHILUS S. **Chromosome number in mammals.** *Science* 61: 423-424. 3 fig. 1925.—This notes the chromosome numbers for representatives of 7 eutherian orders as follows: Hedgehog (Insectivora) 48; bat (Chiroptera) 48; man 48, *Macacus* 48 and *Cebus* 54 (Primates); horse (Ungulata) 60; armadillo (Edentata) 60; dog (Carnivora) 50; rabbit (Rodent) 44.—*C. J. Lyon.*

7645. TOKUGAWA, YOSHICHIKA, AND YOSHINARI KUWADA. **Cytological studies on some garden varieties of *Canna*.** *Japanese Jour. Bot.* 23: 157-173. Pl. 9. 1924.—Haploid chromosome numbers in *Canna* have been reported as 3 and as 8. The authors investigated 18 garden varieties of *Canna* and found the diploid number to be 18 in 13 of the varieties and 27 in 5 varieties. Comparative studies are made on somatic characters of these diploid and triploid plants. In general the stomata of the triploid plants are larger than those of the diploid. Comparisons of the size of epidermal cells and the thickness of the leaves in the triploid and diploid plants do not give clear cut results.—*Gilbert M. Smith.*

7646. WISSELINGH, C. VAN. **Die Zellmembran.** [The cell wall.] In: *Handbuch der Pflanzenanatomie.* Edited by K. LINSBAUER. I Abt., I Teil. Cytologie. Band III-2. viii + 264 p. 73 fig. Borntraeger: Berlin, 1924.—An exhaustive discussion is given of the various groups of compounds that are found in the cell wall. The topics treated include: Cellulose (P. 1-44); hemicelluloses and pectin derivatives (P. 45-89); lignin and lignification (P. 90-134); suberin and cutin (P. 135-169); chitin (P. 170-192); and inorganic compounds (P. 193-198). In the case of each topic there is especial emphasis on the chemical nature of the compounds and their microchemical determination. Comprehensive bibliographies are given in the subsections, of the various topics mentioned above.—The concluding pages (199-210) are taken up with a general discussion of the microscopical structure of the wall and the method of growth of the cell wall. The work concludes with an author index, a subject index, and an index of plant names.—*Gilbert M. Smith.*

## ECOLOGY

GEO. D. FULLER, *Editor*

(See also in this issue Entries 7603, 7617, 7722, 7812, 7816, 7889, 7899, 7900, 7901, 7903, 7908, 7922, 7926, 7934, 7958, 8020, 8056, 8062, 8066, 8128, 8161)

## GENERAL, FACTORS, MEASUREMENTS

7647. BEWS, J. W. **Plant forms and their evolution in South Africa.** iii + 199 p. 31 fig. 1 map. Longmans, Green & Co.: London, 1925.—All the main types of vegetation in South Africa are described with particular attention to the possible evolution of the various plant forms there displayed. The region is regarded as an old land surface, with tropical connections, that has remained relatively unchanged since the rise of flowering plants. It represents many variations in climate and rainfall, the latter having a summer dominance in one section of the country and a winter maximum in another. The 2 floral elements are (1) the tropical-subtropical, the larger with types varying from hygrophilous to desert and, (2) the temperate, developed mostly in the regions of winter rain in the Southwest and taking the form of the sclerophyllous fynbosch or macchia. Some parallelism is seen between the primitive unchanging habitats; such as moist tropical forests, stream banks and swamps, and the distribution of primitive phylogenetic orders such as the Verticillatae, Piperales, Salicales, Myrticales, Leitnerales, Balidales and Ranales.—In the ecological classification of plant forms, trees and shrubs sparingly branched with large undivided leaves are to be regarded as most primitive. Within the group, reduction in size, increase in branching, reduction in size of leaves, increase in branching of leaf veins, production of compound leaves, thorn development, the development of succulence, the deciduous habit and the general increase of xerophytism are regarded as some of the important evolutionary tendencies.



Climbing plants, epiphytes, parasites, aquatics and shade plants are considered derivative. Succulents, desert and semi-desert forms are comparatively recent and the annual flowering plant most recent of all. The tropical rain forest has been a center from which migration southward has taken place, the evolution of new forms being simultaneous with the migration. The central and western arid region, including the Karroo, has constituted a barrier to southward migration and its vegetation has come largely from the East. Of 800 species of trees and shrubs in South Africa 15% are thorny, 31% have compound leaves, 20% have leaves over 3 inches long, 40% have leaves 1-3 inches long, 9% have leaves less than 1 inch long and 3% are succulent.—The distribution and forms of various plant families are discussed. The temperate southwestern flora is shown to be dominated by sclerophyllous shrubs. Its evolutionary tendencies are seen in hardness, and reduced size of leaves, ericoid forms, reduction in size with the retention of large root systems, and general xerophytic characters without succulence or thorn development. The Karroo flora is the most highly specialized with *Mesembrianthemum*, *Stapelia*, *Euphorbia*, *Crassula* and the Aizoaceae showing such growth forms as small trees, dwarf shrubs, thorn development, abundant succulents and geophytes, and many annuals.—The discussion of the various forms is exemplified by descriptions of many individual species, and a bibliography of over 250 citations is appended.—*Geo. D. Fuller*.

7648. BUEN, FERNANDO DE. Rapport préliminaire sur la Croisière de l' "Almirante Lobo" et le "Principe Alberto de Monaco." (Biologie du Thon, *Orcynus thynnus*-L.) [Preliminary report on the cruise of the "Almirante Lobo" and the "Principe Alberto de Monaco." (Biology of the Thon, *Orcynus thynnus* L.) Bull. Commission Internat. Exploration Sci. Mer Méditerranée 10: 28-32. 1924.

7649. BUEN, RAFAEL DE. Rapport préliminaire sur les résultats d'océanographie physique acquis pendant la croisière accomplie en 1923 sur le transport de la Marine "Almirante Lobo" dans le détroit de Gibraltar et les régions limitrophes de la Méditerranée et de l'Océan Atlantique. [Preliminary report on the physical oceanographic results secured during the cruise made in 1923 of the navy transport "Almirante Lobo" in the Strait of Gibraltar and the regions where the Mediterranean and the Atlantic Ocean meet.] Bull. Commission Internat. Exploration Sci. Mer Méditerranée 10: 21-24. 1924.

7650. CEDERGREN, GÖSTA R. Svall-is och forsdimma, två föga beaktade växtekologiska faktorer. [Flow-ice and mist, two neglected ecological factors.] Bot. Notiser 1922: 225-236. 1922.—The author made his observations in northern Sweden in the provinces of Medelpad, Hälsingland, Härjedalen and Jämtland. He found that many plants belonging to a more southern climate occurred on the northern shores and on the islands in rivers below waterfalls and rapids. The water in the falls contains much latent heat, which is increased by friction against the air and the rocks. The mists and fogs around the waterfall are therefore warmer than the air away from the fall and protect the localities in question from early frost in the autumn, while the mist or fog over the bogs and along lake-shores, on the contrary, have a tendency to produce frost. The growing season is therefore prolonged in the autumn, giving the plants a better chance of maturing their fruit. On the other hand, the flow-ice melts more slowly than the snow, gives protection to the plants, especially to their roots, and delays the growing season until danger of late frosts in the spring has passed. The author thinks that the flora of these localities is not to be regarded as a remnant of former vegetation. As most of the plants have fleshy fruit, eaten by birds and other animals, their seed have probably been carried there from the south. He gives examples of 8 such localities with lists of southern plants found there.—*P. A. Rydberg*.

7651. CHODAT, FERNAND. La concentration en ions hydrogène du sol et son importance pour la constitution des formations végétales. [Hydrogen ion concentration in the soil and its relation to the development of plant communities.] Université de Genève, Thèse No. 748. 115 p. 1924.—The 1st part of this article contains a review of our knowledge of the importance of H-ion concentration in biological phenomena and the 2nd part reports a detailed study of the H-ion concentration of the soils of many of the plant associations of eastern France and Switzerland. The associations studied include those of the peat bogs, dunes, beech forest, maquis, waste lands (garides), swamps, steppe, heath, etc.—The author concludes that it is difficult to classify plants or plant associations as oxyphylls, neutrophylls or basiphylls and that the quantitative notion of the amplitude of the accommodation to the soil reaction



in pH should be substituted for such ideas as expressed by the terms calcifuge, calcicole, etc. Other conclusions are that each plant has a definite amplitude of accommodation to the pH of the soil and this should be determined; that marsh formations are not necessarily acid; that the same pH values may characterize soils of very different plant associations; and that associations with similar pH values may be considered as homologous. Two groups of homologous communities are distinguished: (1) the acid, including the maquis, the alpine tundra heath and associations dominated by *Erica*, *Calluna*, *Vaccinium*, and *Quercus suber*; and (2) the alkaline, including associations of *Quercus Ilex*, steppes, garides, etc.—*John Davis, Jr.*

7652. CLEVELAND, L. R. The symbiosis between termites and their intestinal protozoa, and the toxicity of oxygen for protozoa. (Abstract.) *Science* 61: 520-521. 1925.

7653. COWLES, R. P. The distribution of water density and salinity in Chesapeake Bay. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 12: 392-395. *Pl.* 26. 1925.—The distribution of the heavier saline water is described and the factors influencing its distribution are discussed, including the effect of the wind and of the seaward current of fresh water flowing into the bay from the Potomac River.—*Lowell E. Noland.*

7654. DAHLGREN, ULRIC. The biological survey of the Mount Desert Island (Maine) region. *Science* 61: 435-436. 1925.—The survey of flora and fauna was begun in 1923 by members of the staff of the Mount Desert Island Biological Laboratory and Associated Naturalists. Some papers recording results to date have been published or are in preparation and are here listed.—*C. J. Lyon.*

7655. DANGEARD, PIERRE. Limite de la végétation en profondeur de quelques plantes submergées du lac d'Annecy. [The lower limit of certain submerged plants in lake Annecy.] *Compt. Rend. Acad. Sci. Paris* 180: 304-306. 1925.—The maximum depth for *Nitella syncarpa* at the head of the lake is 23 m., *Chara ceratophylla* extends from 5 to 20 m., *Chara foedita* between 10 and 15 m., and *C. aspera* var. *curta* not below 10 or 12 m. *Naias major* goes down to 12-15 m., being the Phanerogam growing at the lowest level. *Elodea canadensis* reaches 10 to 12 m. *Vaucheria* sp., luxuriant but sterile, is found at 20 m.—*C. H. Farr.*

7656. DERJUGIN, K. Das Barents-Meer längs dem Kola-Meridian (33° 30' östl. L.). [The Barents Sea along the meridian of Kola (33° 30' Longitude east).] *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 12: 145-174. *Pl.* 16-18. 1924.—A condensed summary is given of results obtained from 3 expeditions along the meridian of Kola into the Barents Sea. Observations were made on depth, temperature, salt content, dissolved oxygen, plankton, nature of bottom and bottom fauna at 34 stations. Ferro-manganic concretions were found on the bottom in some places. Animals found in trawl catches are briefly listed. Catches of phytoplankton are mentioned but not described.—*Lowell E. Noland.*

7657. DOMOGALLA, B. P., C. JUDAY, AND W. H. PETERSON. The forms of nitrogen found in certain lake waters. *Jour. Biol. Chem.* 63: 269-285. 1925.—There is a seasonal variation in the different forms of nitrogen found in Lake Mendota, an inland lake of Wisconsin. Ammonia, nitrites, amino acids, and proteins reach a maximum in winter and fall to a minimum during summer. The bottom water always contains more of the different forms of soluble nitrogen than the surface water. The plankton (plant material) nitrogen increases as the soluble nitrogen decreases, but shows marked spasmodic changes due to the different crops of plankton which follow one another in rapid succession. The seasonal variation of the different forms of soluble nitrogen indicates that these compounds form part of the nutrients of both plant and animal life in these waters. The forms of nitrogen in 12 other inland lakes of Wisconsin and in Lake Michigan are approximately the same as those found in Lake Mendota.—*G. B. Rigg.*

7658. FISH, C. J. Seasonal distribution of the plankton of the Woods Hole region. *Bull. U. S. Bur. Fish.* 41: 91-179. 1925.—When the pelagic diatoms are most abundant the zooplankton mostly disappears. It is suggested that this may be because the most abundant species of diatoms seemingly are not food for the zooplankton, and perhaps crowd out the smaller phytoplankton which is food for the zooplankton. Summer conditions favor the abundance of many diatom species, while winter favors the dominance of various species at different times. The author disagrees with those who believe that all production occurs in deeper waters of the coast, believing that the evidence indicates that the great production



of floating diatoms occurs at the mouths of rivers. In general the annual distribution of diatoms agrees well with that for the eastern coast of the Atlantic.—*T. C. Frye.*

7659. FORBES, S. A. *Method of determining and measuring the associative relations of species.* (Abstract.) *Science* 61: 524. 1925.—Formulae which show the ecological affiliation of pairs and groups of species are discussed.—*Geo D. Fuller.*

7660. GINZBERGER, A. *Der Einfluss der Meerwassers auf die Gliederung der süddalmatinischen Küstenvegetation.* [The influence of sea water on the zonation of vegetation in Southern Dalmatia.] *Oesterreich. Bot. Zeitschr.* 74: 1-14. 1 pl. 1925.—On the rocky coast of Southern Dalmatia the shore vegetation forms 4 definite zones, (1) the eroding, (2) the black, (3) the grey, and (4) the white being distinguished. All are apparently plantless, but in reality only the white zone is really so. The vegetation over the rocks consists mostly of Schizophyceae, notably *Entophysalis granulosa* Kuetz., *Gleocapsa deusta* Kuetz., and *Calothrix scopulorum* (Web. et Mohr) Ag. Other Schizophyceae, and 2 Rhodophyceae belonging to the genus *Hildenbrandtia*, are found on the 1st and on the 2nd zones.—In the upper edge of the 4th zone are found the first seed plants (halophytes), followed by evergreen shrubs and then by the forest. This is the general condition of island shores whose angle of slope does not exceed 25°. With steeper slopes the halophytic vegetation is less abundant. The wind and the sea water carried as mist or spray seem to be the controlling factors. On the cliffs only thallophytes are found but farther inland there are halophytic and other flowering plants.—*H. Cammerloher (translated).*

7661. GIRAL, J. *Rapport sur l'utilité de pratiquer des déterminations de matière organique, oxygène et acide carbonique sur le meme échantillon d'eau de mer.* [Report on the practicability of the determination organic material, oxygen and carbonic acid in the same sample of sea water.] *Bull. Commission Internat. Exploration Sci. Mer Méditerranée* 10: 46-47. 1924.

7662. GIRAL, J. *Rapport sur la matière organique.* [Report on the organic matter.] *Bull. Commission Internat. Exploration Sci. Mer Méditerranée* 10: 48-49. 1924.

7663. GIRAL, J. *Rapport sur l'eau normale.* [Report on normal water.] *Bull. Commission Internat. Exploration Sci. Mer Méditerranée* 10: 50-51. 1924.

7664. GLEASON, H. A. *Ecological investigation in the hemlock forest.* *Jour. New York Bot. Gard.* 25: 313-316. 1924.—This consists principally of comments on a previous report on the environmental conditions of stands of *Tsuga Canadensis* (See Bot. Absts. 14, Entry 2370). Attention is directed to the large amounts of rainfall interception ranging from 48% at New Haven, Connecticut and 31% at Ithaca, New York to only 9% at New York City. The environmental differences between the hemlock and the hardwood forest at New York, although measurable, do not appear to be sufficient to account for the distinctness of the 2 types. The soil condition seems to offer the most promising point of attack in seeking the cause of the difference.—*Geo. D. Fuller.*

7665. HAMEL, GONTRAN. *Le cours inférieur de la Rance.* [Lower course of the Rance.] *Bull. Mus. Hist. Nat. [Paris]* 30: 414-416. 1924.—The Rance River, France, empties into the English Channel between Saint-Servan and Dinard. Its lower course, which forms a fiord 21 km. in length, is studied by the author from the point of view of its algal flora. The characteristic genera of each locality are listed. *Chantransia parvula* and *Dasya punicea*, collected at Coudray, are reported as new to the French flora. The salinity of the water varies from nearly that of the sea in the lower reaches to brackish above the dam at Chatelier, and the corresponding effect upon the algal distribution is noted. The author also includes observations upon seasonal variations and upon the relation of tides to the animal and plant distribution.—*John M. Fogg, Jr.*

7666. HANN, JULIUS. *Einfluss des Waldes auf das Klima.* [Influence of forest on climate.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 110-116. 1919.—A discussion is given of influence of the forest (1) on the air, (2) on temperature, (3) on the humidity of the air, (4) on precipitation, (5) on the accumulation of water in the forest and (6) on the strength of the wind.—*J. C. Th. Uphof.*

7667. HUEY, LAURENCE M. *Guadalupe Island: an object lesson in man-caused devastation.* *Science* 61: 405-407. 1925.—This island was described as late as 1875 as a "naturalists'

paradise" but by reason of the hordes of goats that multiplied from a few left on the island, all vegetation within their reach is now removed.—*C. J. Lyon.*

7668. L'ISLE, ROLLET DE. *Projet de Carte Bathymétrique de la Méditerranée.* [Project of the Bathymetric chart of the Mediterranean.] Bull. Commission Internat. Exploration Sci. Mer Méditerranée 10: 52-53. 1924.

7669. KNIPOWITSCH, N. M. *Zur Hydrologie und Hydrobiologie des Schwarzen und des Azowschen Meeres.* [The hydrology and hydrobiology of the Black Sea and the Sea of Azof.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 12: 342-349. 1925.—Plankton catches were made at successive levels at many stations in the Black Sea and Sea of Azof to determine the position in various parts of the seas, of the boundary between the lower water rich in hydrogen sulphide and devoid of all life except bacteria and the upper water which is free from hydrogen sulphide and supports abundant plankton. This limit was found to be influenced by the water currents of the 2 seas, and to be nearer the surface in deeper water, but farther down in waters nearer shore.—*Lowell E. Noland.*

7670. [Krashenninnikov, I. M.] Крашенинников, И. М. *Киргизские степи, как объект ботанико-географического анализа и синтеза.* [The steppes of Kirghiz as the subject of phytogeographic analysis and synthesis (Materials for the classification of the Russian steppes).] Известия Главного Ботанического Сада Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. République Russe] 22: 25-55. 1923.—Following a study of the paleogeographical evolution of the country, the author establishes the floristic and ecological types of the Kirghiz steppes and distinguishes the zones and subzones of vegetation.—(Transl. of author's French summary) *Frederick V. Rand.*

7671. LAEMMERMAYR, L. *Untersuchungen über die lichtklimatischen Verhältnisse im Gebiet des Zirbitzkogels und über den Lichtgenuss der Zirbe.* [Investigations of the light relations in coniferous districts and the light requirements of the pine.] Oesterreich. Bot. Zeitschr. 74: 15-26. 2 fig. 1925.—The investigations were carried out at 1273 m. at St. Wolfbang and on slopes at 2397 m. *Pinus Cembra* at lower altitudes has generally a cone-shaped crown but at higher elevations (1600-1700 m.) the upper branches are more spreading. At 1820-1980 m. typical krummholz pines were found. The relative minimum light requirements of the pine increase with increase of altitude. Pine seedlings will not endure direct sunlight but later they become adapted to stronger light. Conifers may be arranged in a series ranging from light-requiring to shade-requiring species, coming between *Pinus silvestris* and *Picea excelsa*. There is close agreement between the light requirements of the pines and those of *Alnus viridis*. At middle elevations *Acer Pseudoplatanus* is found competing with the conifers. Pine needles may turn either the outer or the inner side toward the stronger light. Needles developed in the light have thicker epidermis and smaller stomata on their inner side than needles grown in the shade.—*H. Cammerloher (translated).*

7672. MESSJATZEW, I. *Erste und zweite Expedition des Schwimmenden Wissenschaftlichen Meeresinstituts auf dem Forschungsdampfer "Persey" im Jahre 1923.* [First and second expeditions of the Floating Scientific Oceanic Institute on the exploration-steamer "Persey" in the year 1923.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 12: 396-404. Pl. 27. 1925.—Studies were made on the depth, temperature, salinity, oxygen concentration, pH, plankton, bottom character and bottom fauna of the White Sea and Barents Sea.—*Lowell E. Noland.*

7673. MILDBRAED. *Der afrikanische Urwald und seine Öcologie.* [The ancient forests of Africa and their ecology.] Arch. Pharm. u. Ber. Deutsch. Pharm. Ges. 1924: 161-163. 1924.—The article contains a brief description of the older forests of tropical Africa with special reference to their ecology.—*Elmer H. Wirth.*

7674. NAUMANN, EINAR. *Quantitativ Untersuchungen über die Organismen-formation der Wasseroberfläche. II. Chromulina rosanoffi (Woronin) Bütschli.* [Quantitative investigations on the associations of organisms at the surface of the water. II. *Chromulina rosanoffi* (Woronin) Bütschli.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 12: 215-217. Pl. 21, 1 fig. 1924.—The flagellate mentioned occurs in delicate films at the surface of deeply shaded pools in the mountains of Sweden, where the surface is protected from disturbance by rains or wind, and where the water freezes to the bottom in winter and evaporates completely in summer.—*Lowell E. Noland.*



7675. PETERSON, W. H., E. B. FRED, AND B. P. DOMOGALLA. The occurrence of amino acids and other organic nitrogen compounds in lake water. Jour. Biol. Chem. 63: 287-295. 1925.—The presence of proteins and amino acids (tryptophane tyrosine, histidine, arginine and cystine) in the waters of Wisconsin lakes has been established by both qualitative and quantitative methods. Amine, amide, and purine nitrogen were more abundant in the lower than in the upper strata of lake Mendota.—*G. B. Rigg.*

7676. SCHWEPPEBURG, H. FREIHERR GEYR VON. Bäume und Sträucher des Tuareg-Berglandes. [Trees and shrubs of the Tuareg-Mountain land.] Mitteil. Deutsch. Dendrol. Ges. 29: 164-172. 1920.—Of the woody plants, *Acacia tortilis* and *A. syal* occur over large areas, seeming to prefer loamy soil. *Atriplex halimus* and *Cornulaca monacantha* are found mainly on the sandy areas of the lower oudes where *Tamarix articulata* often associates with the former. Other common species are the poisonous *Nerium Oleander*, *Ficus teloukat*, endemic to these mountains, and often associated with *Rhus oxycantha*, and *Solnostemma argel* here reaching its northern extension. *Zizyphus lotus*, so common in northern Sahara, is rare in the central desert mountains. Two common trees are *Maerua crassifolia* and *Balanites aegyptiacus*.—*J. C. Th. Uphof.*

7677. SMITH, PHILIP S. Explorations in northwestern Alaska. Geog. Rev. 15: 237-254. 1925.—This describes the trees and other plants of the region.—*S. B. Show.*

7678. STEUER, AD. Die künftige Mittelmeerforschung. [Future investigations in the Mediterranean Sea.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 12: 209-214. 1924.—The author offers suggestions as to lines of attack and pitfalls to be avoided in future limnological studies in the Mediterranean Sea. The chief suggestions are: (1) to follow the needs of the commercial fisheries; (2) to work up carefully and quantitatively all material collected by expeditions; (3) to leave the sorting and classification of collected materials to specialists in their fields working together in a shore laboratory; (4) to investigate more fully the distribution of organisms from the shore outward toward deep water; (5) cooperation of all Italian shore laboratories in larger limnological undertakings.—*Lowell E. Noland.*

7679. UPHOF, J. C. TH. Dendrologische Ergebnisse aus dem Santa Catalina Gebirge im südlichen Arizona. [Dendrological observations from the Santa Catalina Mountains in southern Arizona.] Mitteil. Deutsch. Dendrol. Ges. 31: 207-214. 2 pl., 1 fig. 1921.—The different plant associations of the desert and the mesas that are of dendrological interest are described. The woody plants of the mesas are mainly microphyllous, sclerophyllous or succulent. Along the streams, usually dry in summer, are broadleaved trees and shrubs.—*J. C. Th. Uphof.*

7680. VUYCK, L. De Gerrits-Flesch. Nederland Kruidk. Arch. 1923: 61-67. 1924.—The Gerrits-Flesch in the Veluwe, Netherlands, is a lake surrounded by swamps. The flora and fauna are apparently very old.—*J. C. Th. Uphof.*

7681. WOOLETT, EDITH, DORIS DEAN, and HELEN COBURN. Application of Gleason's formula to a *Carex lasiocarpa* association, an association of few species.] Bull. Torrey Bot. Club 52: 23-25. 1925.—Gleason's formula (See Bot. Absts. 14, Entry 6187), "a mathematical expression for the number of species in a given area," has been shown to apply to an association of a large number of species and is now found to apply to an association of a small number of species, as exemplified by the *Carex lasiocarpa* association at Smith's Bog, Cheboygan County, Michigan.—*P. A. Munz.*

### STRUCTURE, BEHAVIOR, SYMBIOSIS

7682. GOEZE, F. Riesiges und zwergiges Wachstum in der Baum- und Strauchwelt. [Gigantic growth and dwarfing in trees and shrubs.] Mitteil. Deutsch. Dendrol. Ges. 31: 146-151. 1921.

7683. KORSTIAN, C. F. Coincidence between the ranges of forms of western yellow pine, bark beetles and mistletoe. Science 61: 448. 1925.—The mountain pine beetle (*Dendroctonus monticola* Hopk.) and the mistletoe (*Razoumofskyia campylopoda* (Engelm.) Piper) are found on the Pacific Coast form of western yellow pine (*Pinus ponderosa* Laws.) while the Black Hills beetle (*Dendroctonus ponderosa* Hopk.) and the mistletoe (*Razoumofskyia cryptopoda* (Engelm.) Coville) range with the Rocky Mountain form of yellow pine (*Pinus ponderosa scopulorum* Engelm.). These cases provide evidence for the belief that biologic forms change in response to the environment.—*C. J. Lyon.*

7684. LIESE. Über stickstoffsammelnde Holzgewächse. [Nitrogen storing woody plants.] Mitteil. Deutsch. Dendrol. Ges. 32: 108-109. 1922.—The soil bacteria, *Acetobacter chroococcum*, *Closteridium Pasteurianum*, etc., the symbionts on *Alnus* and *Elaeagnus*, and the different forms of *Bacterium radicolica* on the Leguminosaceae are discussed from a dendrological standpoint.—*J. C. Th. Uphof*.

7685. MACKEY, A. H. The phenology of Nova Scotia, 1919. Proc. & Trans. Nova Scotian Inst. Sci. 15: 129-136. 1922.—This is an outline summary of phenological observation made through the public schools of the Province of Nova Scotia, covering its 10 phenological divisions and their sub-divisions into coast, lowland and highland belts. There are over 100 objects listed for observation (1) when first seen and (2) when becoming common, and the observations have been carried on for over 30 years, serving also as a stimulus for "Nature Study" in the schools. The observations are compiled and averaged annually for each belt and region. This paper is merely the most general summary of the phenochrons of each region; the detailed tables of phenochrons for each belt and region are bound in Annual Volumes and deposited in the Provincial Science Library, Halifax, Nova Scotia.—*Author*.

7686. MANNING, MARY H. *Ranunculus glaberrimus* Hook. Madroño 1: 147. 1924.—The blooming period and habitat of *Ranunculus glaberrimus* in northeastern California is discussed.—*Roxana Stinchfield Ferris*.

7687. PAMMEL, L. H. The extension of the Yucca moth. Science 61: 414-415. 1925.—A form of *Yucca filamentosa* at Ames, Iowa, has been found to bear fruit with other evidence of pollination by the Yucca moth. The insect has evidently been recently introduced to that locality.—*C. J. Lyon*.

7688. PERKINS, ALFRED T. Regarding the possible adaptation of soy bean *Radicicola* to a specific host variety. Jour. Agric. Res. 30: 243-244. 1925.—Nodular organisms isolated from various varieties of soy-bean were inoculated back on the original host variety and on other varieties. No adaptation for a specific variety was noticeable, as the varieties of beans that nodulated heavily with one culture nodulated heavily with all cultures. The results, while negative, must not be taken as conclusive.—*Author*.

7689. PERKINS, ALFRED T. The effect of bacterial numbers on the nodulation of Virginia soy beans. Jour. Agric. Res. 30: 95-96. 1925.—Virginia soy-beans were grown in a medium of such a nature that the reproduction of nodular organisms, used for inoculation purposes, was extremely limited. Plants growing in different pots were inoculated with various numbers of organisms by mixing the organisms with the substrata, and a distinct correlation was found to exist between the number of organisms used and the nodulation produced. A maximum nodulation is produced by a limited number of organisms per seed, that is, about 50.—*Author*.

7690. RAYNER, M. C. An endotrophic fungus in the Coniferae. Nature 115: 14-15. 1925.—Reference is made to an article by F. J. LEWIS (See Bot. Absts. 14, Entry 5605) and to other papers. The observations of Lewis confirm the view long held by the writer that the ectotrophic or endotrophic condition of mycorrhizas is one of degree of infection only.—*O. A. Stevens*.

7691. SCHWERIN, FRITZ VON. Vermeintliche Geholzneuheiten. [Supposed novelties in trees and shrubs.] Mitteil. Deutsch. Dendrol. Ges. 28: 155-159. 1919.—Environmental factors may change the form of trees and shrubs to such an extent as to make them appear to be new varieties, as in the different shapes of crown caused by wind. Other examples are pendulous forms at forest margins, creeping forms caused by cutting back, and columnar forms due to drought. Climate and moisture give also different leaf forms.—*J. C. Th. Uphof*.

7692. SEIFRIZ, WILLIAM. The gregarious flowering of the talipot palm, *Corypha umbraculifera*, at Peradeniya, Ceylon. Bull. Torrey Bot. Club 51: 341-350. Pl. 8-9, fig. 1. 1924.—"All available evidence points toward an heritable tendency as the cause of gregarious flowering in the talipot palm, *Corypha umbraculifera*" as observed in Ceylon. It would seem that these palms reach a condition of maturity in from 37 to 43 years, and that in Ceylon it is common to have groups of several or many individuals flower simultaneously every few years.—*P. A. Munz*.

7693. SEIN, F., JR. Las abejas en los cafetales. [Bees in a coffee grove.] Porto Rico Insular Exp. Sta. Circ. 79. 1-6. 1 fig. 1923.—It contains a description of the flower of the coffee plant and how it is pollinated by bees.—*J. I. Otero*.



7694. ZENDER, J. Le comportement des haustoriums du *Cuscuta europaea* dans les tissus de la plante. [Behavior of the haustoria of *Cuscuta europaea*.] Compt. Rend. Soc. Physiol. et Hist. Nat. Genève 41: 131-134. 1924.—The haustoria cause a disorganization of the cells of the host similar to that produced by parasitic fungi but seem to adjust themselves to the host in a sort of symbiotic relationship. The adjustment of the tissues of the haustoria to the tracheae of the host is very perfect. The sieve tubes seem to contain substances essential for the development of the parasite since they seem to stimulate the extension of the haustoria.—Geo. D. Fuller.

7695. ZENDER, J. Les haustoriums de la cuscute et les réactions de l'hôte. [The haustoria of the dodder and the reactions of its hosts.] Université de Genève. Thèse No. 757. 81 p. Pl. 1-3, fig. 1-50. 1924.—The author describes the penetration of the haustoria of *Cuscuta europaea* into the tissues of plants belonging to families ranging from the Pteridophyta to the Compositae. Considerable variation in behavior is described and figured. The reaction of the host is very slight but a few plants such as *Rubus idaeus* and *Chaerophyllum silvester* develop some wound tissue which tends to oppose the entrance of the haustoria. The enlarged nuclei of the haustoria indicate that an active chemical metabolism is centered in them. As the haustoria reach the phloem they spread out as digitate processes and by their behavior indicate that the contents of the sieve tubes are important for the nutrition of the parasite. The close relationship of the haustoria and the tracheae of the host indicates that as soon as penetration takes place the parasite is able to obtain the water and minerals necessary for its existence.—Geo. D. Fuller.

#### VEGETATION

7696. BROWN, W. H. Vegetation of the Philippine Mountains. Bur. Sci. [Philippine Is.] Publ. 13: 1-434. Pl. 1-41, fig. 1-30. 1919.—The lowland type of the part of the Philippines under consideration is the Dipterocarp forest and extends to an altitude of 600 m. It exhibits distinct strata or stories composed of vegetation 40, 20, and 10 m. high respectively. Epiphytes are largely phanerogams, and are confined chiefly to the largest branches of the tallest trees. Buttressed trees and cauliflora are developed by many species, while the ground covering is characterized by rattans in the rosette stage. On a typical plot there were 22 first story species, 43 second story species, and 23 lower story species.—The midmountain forest extends from 600 to 900 m. and shows 2 stories of about 18 and 8 m. in height. The undergrowth is less dense, but the ground cover of ferns and herbaceous plants is better developed than in the Dipterocarp forest. Epiphytes are also more abundant, and include more cryptogams. Above 900 m. a montane forest is developed, exhibiting a single stratum of vegetation some 10 m. high, and known as the "mossy forest" from the great abundance of mosslike plants.—As developed on Mt. Maquiling this last may be termed a *Cyathea*-*Astronia* association from the 2 most prominent genera. The herbaceous ground cover is dense; mosses, filmy and other ferns, *Selaginella*, orchids, and lianas are abundant, many growing as epiphytes. Trees are low and contorted in habit. Statistical analyses are made of all types of forest, the size of the trees as well as their floristic relationship being given. Detailed data regarding rates of growth of trees seem to show that they are proportional to the heights of the various forest types. Stations were located in these forests, where measurements were made of environmental factors, including temperature, light, evaporation, rainfall, humidity, soil moisture, and wind velocity. Many data were collected and are presented in tables and graphs. Some of the most interesting conclusions based upon these data are: (1) humidity is high at all elevations, and the atmosphere is practically saturated at all times under the montane forest; (2) temperature gradually decreases with rising elevation; (3) evaporation in all forests is much less than in the mesophytic forests of the U. S. A., and decreases rapidly with increasing altitude; (4) there is a pronounced, although not severe, dry season; (5) only at low elevations does there appear to be sufficient decrease in soil moisture during the dry season to have any harmful effect on vegetation; and (6) the increase in herbaceous vegetation with increasing altitude is due to increased soil moisture and decreased rate of evaporation.—An analysis of the foliage shows that leaves with entire margins are more abundant in the lower stories than in the upper, and at lower elevations than at higher

ones. Classified according to the system devised by Raunkiaer, the plants over 1 m. in height are found to show but 3 leaf sizes, and the number of species with microphyll, mesophyll, and macrophyll leaves are, for the most part, Dipterocarp forest, respectively, 4:79:9; for the mid-mountain forest 4:61:5; and for the mossy forest 8:8:0, showing a decided decrease in leaf size with increase in elevation.—The Philippine vegetation is made more attractive to the reader by numerous good photographs reproduced on excellent plates.—*Geo. D. Fuller.*

## FLORISTICS

7697. ALLORGE, PIERRE. *Le Breutelia Chrysocoma* (Dicks.) Lindb. dans les Pyrénées basques. [B. chrysocoma in the Pyrenees.] Bull. Soc. Bot. France 71: 906-909. 1924.—This moss, one of the rarest in the French flora, was found on the northern border of the forest of Iraty (Basses Pyrénées). The author notes that it occurs in the Faeroes, in Norway, British Isles, Germany, Switzerland and France. This makes the species seem to be an Atlantic form (eu-atlantique) of paleoendemic age, existing during the Quaternary in Ireland and the south of England. The genus *Breutelia* comprises 90 spp. occurring in the high tropical mountains of the southern hemisphere. *B. Chrysocoma*, the only north temperate species, is separated by over 4,000 m. from its nearest relative, *B. diffracta* Mitt., of the Camaroon Mountains.—*J. Chiffot (translated).*

7698. BORNMÜLLER, J. Ueber *Tilia rubra* D. C. spontan in Oberbayern. [*Tilia rubra* D. C. spontaneous in Upper Bavaria.] Mitteil. Deutsch. Dendrol. Ges. 31: 121-123. 1921.—The writer mentions the occurrence of *Tilia rubra*, a South-European species in Bavaria. Its geographical distribution is described.—*J. C. Th. Uphof.*

7699. BURTT-DAVY, J. The geographical distribution of some Transvaal Leguminosae. (Abstract.) Proc. Linn. Soc. London 135: 66-68. 1923.

7700. ELLSWORTH, ADELINE. *Kumlienia hystricula* Greene. Madroño 1: 147. 1924.—*Kumlienia hystricula* was found blooming as early as January 7 at Don Pedro, on the Tuolumne River, California. Because of its habitat it is suggested that it is a relic of glacial times.—*Roxana Stinchfield Ferris.*

7701. FUCHSIG, H. Die im Wasser wachsenden Moose des Lunzer Seengebietes. [The mosses that grow in the water of the Lunz lake region.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 12: 175-208. Pl. 19-20, 1 fig. 1924.—A study was made of the submerged moss flora of 3 Austrian lakes near Lunz, having altitudes of 610, 766 and 1115 m., respectively. A list of 50 species of mosses is reported together with notes on their habitats and abundance. Some species were found chiefly or only in association with certain other species. The author groups the mosses which he found into 6 classes based on their dependence on or independence of other species of mosses. A brief consideration of the probable postglacial repopulation of these lakes is given. The fauna on the leaves of the mosses was found to be more or less specific for each type of moss.—*Lowell E. Noland.*

7702. GRAPENGIESSER, STEN. En blick på Holmöarnes flora. [The flora of Holm Islands (Bay of Bothnia, Swedish coast).] Bot. Notiser 1922: 313-316. 1922.—The group consists of 2 main islands, Holmö and Ängesö, and several smaller islets. The soil is poor ocean sand on a bedrock of gneiss, devoid of lime. The interior of both islands consists mostly of spruce woods. Holmö is mostly pasture and fenced grain fields but Ängesö is, on the contrary, largely natural hay meadows. A list of species is given, of which *Avena pratensis* is lacking on the neighboring mainland and *Rumex fennicus* is new to Sweden.—*P. A. Rydberg.*

7703. GRÖNWALL, KARL A. *Impatiens parviflora* Dc. vid Billinge, Skåne [most southern province of Sweden]. Bot. Notiser 1922: 257-258. 1922.—This Siberian plant has established itself here in dry soil on a moraine. It is not a native of Sweden, but is found there and in Germany as a weed in gardens and parks. Lilja reported it in "Skånes Flora," 2nd edition.—*P. A. Rydberg.*

7704. HÅRD AF SEGERSTAD, FREDRIK. Försök till en växtgeografisk indelning av södra Sverige samt om fördelningen av *Lamium intermedium* Fr. och *Lamium hybridum* Will. därstädes. [A Phytogeographic division of Southern Sweden and the distribution of *L. intermedium* and *L. hybridum*.] Bot. Notiser 1922: 277-286. 2 maps. 1922.—The author divides southern Sweden into 3 divisions, (1) Eutrophic region, (2) Mesotrophic region, and (3)



Oligotrophic region. *Lamium intermedium* is more common in the Mesotrophic region and *L. Hybridum* in the Eutrophic one. Numerous localities are cited.—*P. A. Rydberg.*

7705. LONGO, B. *Sul Pinus magellensis dello Schouw al M. Amaro.* [Schouw's *Pinus magellensis* on Mt. Amaro.] *Ann. Bot.* 16: 165-170. *Fig. 1-2.* 1924.—On an excursion to Mt. Amaro, the highest peak of the Majella Mountains, in Italy, the author found no dwarf pines as reported by Schouw in 1845. *Pinus pumilio* Haencke was found, however, on lower peaks. The author thinks that Schouw mixed his notes regarding the vegetation of Mount Amaro with those on Mount Pollino for which he says that the dwarf pine association is limited while the author finds it extending to the top of Dolcedorme, the highest peak of Mount Pollino.—*P. D. Caldis.*

7706. MERRILL, G. K. *Lichens.* Rept. Canadian Arctic Expedition 1913-18. Vol. 4. Pt. D. 12 p. 1924.—This is an annotated list of 93 species of lichens collected principally by Fritz Johansen at points on the Arctic coast of America along the 70th parallel. Of these only *Cetraria Chrysantha*, *Polyblastia scotinospora* and *Verrucaria striatula* seem to be exclusively arctic.—*Geo. D. Fuller.*

7707. TRAPL, ST. *Saxifraga mutata* in der Niederen Tatra. [Saxifraga mutata at lower altitudes.] *Oesterreich. Bot. Zeitschr.* 74: 58. 1925.—The author found *Saxifraga mutata* on Salatin peak in a form resembling the common alpine variety *genuina* of Engler and Irmsch, rather than the Carpathian variety *demissa* Schott.—*H. Cammerloher (translated),*

7708. UPHOF, J. C. TH. *Das Vorkommen von Neviusia alabamensis im Süden von Missouri.* [The occurrence of *Neviusia alabamensis* in southern Missouri.] *Mitteil. Deutsch. Dendrol. Ges.* 31: 282-283. 1 *fig.* 1923.—An individual plant of this rare shrub was found near Poplar Bluff, Missouri.—*J. C. Th. Uphof.*

7709. WANGERIN, W. *Neuere pflanzengeographische Literatur aus Finnland.* [Recent papers on plant geography from Finland.] *Naturwissenschaften* 12: 429-435. 1924.

## FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 7614, 7632, 7633, 7634, 7664, 7666, 7671, 7673, 7676, 7677, 7679, 7682, 7683, 7691, 7696, 7787, 7788, 7816, 7833, 7850, 7882, 7964, 7979, 7981, 8135, 8137, 8145)

7710. ANONYMOUS. *Annual return of statistics relating to forest administration in British India for the year 1922-23.* 31 p. Calcutta, 1924.—Only 25.6% of the forest area is under working plans. Of the area on which protection was attempted, 27.9% was burned over. The area of plantations increased to 205,500 acres.—*S. B. Show.*

7711. ANONYMOUS. *California Forest Service fire protection sale policy.* *Timberman* 26<sup>4</sup>: 123-124. 1925.

7712. ANONYMOUS. *Der Holzreichtum Paraguays.* [Timber wealth of Paraguay.] *Tropenpflanzer* 23: 157-158. 1920.—Paraguay has many forests of economic value. *Quebracha colorado* is an important timber tree and is especially valued for its tannin. Several other timber species are described.—*J. C. Th. Uphof.*

7713. ANONYMOUS. *Loi portant nouvelle prorogation de la loi du Janvier 1921.* [Law prolonging the effects of the law of January 23, 1921.] *Bull. Soc. Centrale Forest. Belgique* 31: 1-3. 1924.—The reasons for the law restricting excessive exploitation of certain classes of privately owned woods and forests are explained.—*H. T. Gisborne.*

7714. ANONYMOUS. *Lumbering in the Philippine Islands.* *Timberman* 26<sup>6</sup>: 56-57. 3 *fig.* 1925.

7715. ANONYMOUS. *New Zealand reforestation project.* *Timberman* 26<sup>5</sup>: 228. 1925.—A project for planting 55,000 acres with various species of fast growing timber trees is described. A mean annual yield of 1,000 board feet per acre is counted on.—*W. N. Sparhawk.*

7716. ANONYMOUS. *Observations en matiere forestiere en 1922.* [The year 1922 in relation to forestry.] *Bull. Soc. Centrale Forest. Belgique* 31: 27-34. 1924.—The weather, vegetative growth, seed production, insects, and fungus diseases of note in Belgium during 1922 are described briefly. Some of the more important experiments commenced during the year are mentioned.—*H. T. Gisborne.*

7717. ANONYMOUS. 1000 jährige *Taxus baccata*. [1000 year-old *Taxus baccata*.] Mitteil. Deutsch. Dendrol. Ges. 34: 361. 1924.—Two individuals of *Taxus baccata* are recorded from a garden in Oldenbrok-Altendorf, Germany, which are at least 1000 years old.—*J. C. Th. Uphof*.

7718. ANONYMOUS. Proposed Washington reforestation legislation. Timberman 26<sup>6</sup>: 164-166. 1925.

7719. ANONYMOUS. The international congress of forestry. Science 61: 462. 1925.—A congress is to be held in Rome in May, 1926.—*C. J. Lyon*.

7720. ANONYMOUS. Work of the Northeastern Forest Experiment Station. Science 61: 462-463. 1925.

7721. AICHINGER, ERWIN. Dauerwaldwirtschaft. [Continuous forests.] Wiener Allg. Forst- u. Jagdzeitg. 43: 37-39. 1925.—A continuous forest cover is the chief object of this system and the trees are removed singly all over the area. The forests and the life of the forest floor are to be considered as a single complex organism, and any factors that disturb it result in lower productivity of the forest. The invasion of forests by heather and other weeds of similar type indicates a serious disturbance of natural conditions. Difficulties of this kind that frequently follow clear cutting are avoided by maintaining a continuous forest, as it affords favorable moisture and temperature conditions in the upper soil layers. Mixed forests are more easily maintained by this system than in any other way, and with the wide scattering of seed, each species tends to occupy the most suitable sites. Slow growing trees may be taken and those which are growing rapidly may be left. While logging is more expensive and management more complicated, these are not considered to be serious objections.—The paper closes with a description of the Bärenthoren forest, in which the system was originally developed.—In an appended comment, A. WEEDER is less optimistic concerning this system, because of the difficulties in planning the management of large areas, the difficulties in logging, and, in many cases, the relatively small improvement in growth.—*F. S. Baker*.

7722. D'ALVIELLA, FELIX G. Notes sur l'histoire des forêts belges. [Notes on the history of Belgian forests.] Bull. Soc. Centrale Forest. Belgique 31: 57-74, 117-140. 1924.—Chapter 1 deals with the forests and the climate of prehistoric times, as learned from the record in the rocks.—Chapter 2 deals with conditions at the time of the Roman Conquest, about 57 B. C. At that time there were extensive forests of large trees. These were gradually cut away as agriculture developed. The climate was more harsh, colder, and rainier than at present, because of the forests. Their value in case of war was largely because of the protection they afforded rather than for the materials they supplied.—Chapter 3 describes the agricultural and road developments under the Roman regime. Roads contributed much toward the reduction of the forest area, by permitting easier transportation of forest products to the forestless coastal districts. The Roman armies also consumed large quantities of forest products and encouraged clearing of land for agriculture. The importance of the forest as a factor in establishing national and language boundaries is pointed out. From the writings of contemporary historians it has been possible to delimit the major forest boundaries rather definitely.—*H. T. Gisborne*.

7723. B., C. Quelques remarques sur le tulipier. [Some notes on the tulip poplar.] Bull. Soc. Centrale Forest. Belgique 31: 96-100. 1 pl. 1924.—This article describes the range and size of *Liriodendron tulipifera* in America and extols its advantages for park and forest planting in Belgium. It was introduced into Europe in the 17th century and has thrived there.—*H. T. Gisborne*.

7724. BERG, FRIEDRICH VON. Das spezifische Gewicht von Holzproben der *Pseudotsuga taxifolia*. [Specific gravity of wood samples of *Pseudotsuga taxifolia*.] Mitteil. Deutsch. Dendrol. Ges. 34: 104-107. 1924.—The specific gravities are given for wood samples from Hummelshof and Sagnitz, Esthonia; Summerset, England; and the Columbia River, U. S. A. They range from 0.44123 to 0.5361, and the number of annual rings to 10 cm. of radius ranged from 14.47 to 200.—*J. C. Th. Uphof*.

7725. BOHM, B. Ergebnisse des Anbaus ausländischer Holzarten in den ostpreussischen Staatswäldungen. [Raising exotic trees in the state forests of East Prussia.] Mitteil. Deutsch. Dendrol. Ges. 32: 194-210. 1922.—Experiments with exotic trees were started in 1881, and are carried on in 18 forests in East Prussia. The behavior of 24 species of coniferous



and broad-leaved trees is described. *Abies concolor*, *Pinus strobus*, *Pseudotsuga Douglasii* and *Quercus rubra* are especially noteworthy.—J. C. Th. Uphof.

7726. BUCH, JACOB. Die Aussaat verschiedener Waldsamen nach Halstenbeker Methode. [Sowing of different seed after the Halstenbek method.] Mitteil. Deutsch. Dendrol. Ges. 28: 288-291. 1919.—After thoroughly cultivating the ground the seed are sown and covered with soil. Experience in sowing seed of 25 different species is related.—J. C. Th. Uphof.

7727. C. La loi federale suisse sur la protection des forêts. [The Swiss federal law for the protection of forests.] Bull. Soc. Centrale Forest. Belgique 31: 172-174. 1924.—The law of October 11, 1902, classified the forests as protection and non-protection forests. It forbade clear cutting of protection forests, but left the management of other forests to the owners, providing they did not reduce the total forest area. In 1917 the law was amended to prevent clear cutting on any forest, protection or non-protection, public or private, except under federal supervision.—H. T. Gisborne.

7728. COLLEAUX, H. Excursion forestiere en 1923. La forêt de Soignes. [Forest excursion in 1923 in the forest of Soignes.] Bull. Soc. Centrale Forest. Belgique 31: 140-150. 1924.—The history, location, topography, climate, soil, composition, administration, products, and treatment of the forest are described.—H. T. Gisborne.

7729. D., M. Le Hanneton. [The May beetle.] Bull. Soc. Centrale Forest. Belgique 31: 24-27. 1924.—Unfavorable weather, birds, insects, and diseases have little effect in reducing damage by this beetle. The most practical method of control seems to be the collection and killing of the adults. This may be done: (1) by building at night a large fire which attracts the beetles; (2) by throwing a strong light on a white wall against which the beetles fly, causing them to fall into a trough of water or kerosene; or (3) by gathering them by hand between 4 and 7 A.M., and burning them.—H. T. Gisborne.

7730. DALRYMPLE-HAY, R., ET AL. Report of Forestry Commission New South Wales for year ended June 30, 1924. 15 p. Sydney, 1924.—The area planted was 2182 acres; 39,737 acres were treated for regeneration; 42,440 acres were added to the state forests, and 136,700 acres were opened for settlement. Forest fires burned 166,880 acres.—S. B. Show.

7731. DEANS, J. Trees on farms. Advantages of plantations. New Zealand Forest Mag. 44: 4. 1925.—Five per cent of every farm should be in timber. It is possible to eradicate noxious weeds by tree-planting. In the Canterbury district the following are most useful: *Pinus radiata*, *P. ponderosa* (needs a shelter-belt), *Pseudotsuga Douglasii*, *Sequoia sempervirens* (will stand considerable moisture), and *Cupressus macrocarpa*. Of the eucalypts, only *E. viminalis*, *E. obliqua*, *E. regnans*, and *E. Macarthuri* are suitable, owing to the winter cold.—H. H. Allan.

7732. DICKS, A. R. Annual progress report on forest administration in the Province of Bihar and Orissa for the year 1923-24, with a summary of progress during the period 1919-20 to 1923-24. 67 + 5 p. Patna, 1924.—During the year, fire protection was 95.8% successful, 1 new working plan was approved, and a detailed study aiming toward better treatment of private forests was completed. The operations continued to show a profit.—S. B. Show.

7733. DUMONCEAUX, M. Influence du lierre sur la vegetation des arbres. [The influence of ivy on the growth of trees.] Bull. Soc. Centrale Forest. Belgique 31: 154-157. 1924.—Ivy is not parasitic. It does some harm by adding weight to the branches of the trees, and by shading the soil and thus hindering the germination of tree seed, when it covers the ground.—H. T. Gisborne.

7734. EKLUND, S., OCH G. WENNMARK. Några undersökningar av aspskog. [Some investigations in aspen forests.] Skogsvårdsför. Tidskr. 23: 80-104, 123-142. Fig. 1-19. 1925.—Detailed studies on 7 sample plots throughout Sweden indicate that aspen (*Populus tremula*, L.) is severely attacked by (1) *Armillaria mellea* which enters the roots chiefly through wounds caused to the lateral roots by the trampling of cattle, and also from the old stump in the case of sprouts; and by (2) *Polyporus igniarius* which enters the trunk through dead branch scars, and extends from the stump to the base of the green crown. Rapidly growing stands suffer least from these fungi, the loss varying from 6 to 23% of the volume. Exclusion of grazing, together with well-executed thinnings should go far toward removing the danger of rot. In great demand for match manufacture, aspen should yield excellent returns when grown on a 50 year rotation. In estimating aspen stands by means of the form point method, values for

older stands will be about 4% too high unless reduction factors based on percentage of bark are applied.—*Henry I. Baldwin.*

7735. EMEIS. Zum waldbauliches Verhalten der Lärche. [Silvics of *Larix*.] Mitteil. Deutsch. Dendrol. Ges. 28: 106-110. 1919.—Growth and distribution of *Larix europaea* are described. *L. lepirolepis* grows faster and does better in the humid coastal belt and on poor soils. It is not entirely immune against *Peziza Wilkommii*, and it suffers under continuous drought and heat. It can be grown successfully in mixture with the slower growing oaks, beech and *Abies nobilis*. It is less susceptible to forest fires than many other species.—*J. C. Th. Uphof.*

7736. FORBES, RALPH E. Western red cedar, its properties and uses. Timberman 26<sup>6</sup>: 49-50. 4 fig. 1925.

7737. GOEZE, E. Portugals Eichen. [The oaks of Portugal.] Mitteil. Deutsch. Dendrol. Ges. 31: 151-155. 1921.—The growing of cork oak is expanded yearly. The acorns of some cork oaks ripen the 1st year, while others ripen the 2nd year. The writer suggests that this may be *Quercus ilex* with a corky bark. *Q. ilex* varies considerably in form and in the taste of the acorns, also in the shape of the leaves, which resemble those of *Q. suber*. Other oaks are mentioned.—*J. C. Th. Uphof.*

7738. GRUNDNER, F. Die Anbauversuche mit fremdländischen Holzarten in den braunschweigischen Staatsforsten. [Experiments with exotic trees in the state forests of Brunswick.] Mitteil. Deutsch. Dendrol. Ges. 31: 19-68. 1921.—*Pseudotsuga Douglasii* has been experimented with since 1876. Its planting on a large scale in Brunswick is recommended, as it yields more than many native species. It has been planted in pure stands and mixed with other trees. *Abies Fraseri* produces wood of an inferior grade. *Picea alba* is recommended as a wind break along the coast. It may be grown in the valleys as well as in the mountains; it resists wind, frost, and drought. *Pinus strobus*, which has been grown for years, produces excellent wood and paper pulp. *Pinus banksiana* does well on the poorest sandy soil, and also grows on moist, marshy soil subject to late frosts. *Picea sitchensis* on fresh sandy soil, protected by birches, was not injured by late frosts. Besides American species, several Japanese, Siberian, Caucasian, and southern European conifers and deciduous trees are described.—*J. C. Th. Uphof.*

7739. HARTMAN. Zur Lärchenfrage. [The larch question.] Wiener Allg. Forst- u. Jagdzeitg. 42: 301-303. 1924.—The erratic behavior of larch in the mixed artificial stands of Austria and Germany is causing it to be discriminated against. The author cites the history of several plantations and discusses the factors that may influence success, without, however, formulating any concrete theory or plan of successful management of larch in mixed plantations.—*F. S. Baker.*

7740. HAUSRATH. Erfahrungen mit dem Anbau fremder Holzarten in den Forsten Badens. [Experiences in growing exotic trees in the forests of Baden.] Mitteil. Deutsch. Dendrol. Ges. 31: 233-244. 1921.—Experiments are described with North American and a few other forest trees, beginning in 1780. *Abies nordmanniana* is much grown and is less susceptible to late frost than native *Abies* species. *A. concolor* was resistant to frost at an altitude of 800 m. There is no need to introduce exotics within the range of the native fir at 500-1050 m. The writer does not agree with the statement that *Picea sitchensis* and *P. pungens* are not damaged by stags. *Pinus strobus* is grown to a considerable extent and produces good lumber. *Pinus banksiana* does well on poor, sandy soil. The green variety of *Pseudotsuga Douglasii* is preferred, for the blue variety grows too slowly. A table shows the yields of different species in various parts of Baden.—*J. C. Th. Uphof.*

7741. HERMANSEN, SÖREN. Die Forstbaumschulen und der Krieg. [Forest tree nurseries and the war.] Mitteil. Deutsch. Dendrol. Ges. 28: 291-293. 1919.—Forest nurseries in Germany were flourishing before 1914. Sufficient plants were available to supply domestic needs, with a surplus for export. Since 1900, exotic species, especially those from western North America and from Japan, were grown to a considerable extent. During the war production was curtailed on account of the shortage of labor. In 1918 the small demand for trees was larger than the supply. The need for careful selection of mother trees in collecting seed is pointed out.—*J. C. Th. Uphof.*

7742. HEINRICH XXXII, PRINZ REUSS. Dendrologische Beobachtungen. [Dendrological



notes.] Mitteil. Deutsch. Dendrol. Ges. 31: 161. 1921.—*Quercus rubra* is suitable for light soils. It resists mildew, to which the German oaks are susceptible.—*J. C. Th. Uphof*.

7743. HEINRICH XXXII, PRINZ REUSS. *Dendrologische Wanderbilder*. [Dendrological sketches.] Mitteil. Deutsch. Dendrol. Ges. 31: 161-170. 1921.—The writer describes the forest conditions and the principal trees in Baden-Baden, along the North Sea, in the Hohgau, the Neuburger forest, and the Bavarian forests.—*J. C. Th. Uphof*.

7744. HEINRICH XXXII, PRINZ REUSS. *Forstwirtschaft in der Kap-Kolonie*. [Forestry in Cape Colony.] Mitteil. Deutsch. Dendrol. Ges. 31: 155-160. 1921.—*Podocarpus* is one of the most valuable trees of South Africa. The wood is easy to work and is much used for construction. Several hardwoods are also used. *Olea laurifolia* produces a very hard wood, and also an oil. *Ocotea bullata* produces beautiful dark red wood, that has a disagreeable, sharp odor. The Forest Service in Cape Colony is described. *Acacia melanoxydon* is planted in strips along the forests and protects them from fire coming from the outside. It grows fast and in a few years forms a dense thicket. *Acacia melanoxydon*, *Pinus insignis*, and *P. canariensis* are grown in nurseries, and extensive plantations of pine have been made. A chapter is devoted to the lumber industry.—*J. C. Th. Uphof*.

7745. JUGOVIZ. *Rückschau und Ausblick in das Forstwesen Oesterreichs*. [Review and outlook of forestry in Austria.] Wiener Allg. Forst- u. Jagdzeitg. 43: 7-10. 1925.—The author takes a pessimistic attitude, especially as to the alpine timberlands. These have never been under intensive management, and while the situation showed signs of improving shortly before the World War, Austrian forestry was disrupted by the war, and silviculture and effective forest protection is being lost sight of. Forest management is dictated by financial considerations and the foresters are becoming logging engineers rather than silviculturists. Present methods are leading to forest destruction, deterioration in quality of the stands and, in the alpine forests, threaten to bring about conditions that may lead to serious damage to watersheds.—*F. S. Baker*.

7746. KOLWRAT, ED. *Die Tagung des Deutschen Forstvereines 1924*. [The excursion of the German Forest Association in 1924.] Wiener Allg. Forst- u. Jagdzeitg. 43: 13-14. 1925.—A number of forests were visited in Bamberg (northern Franconia, in Bavaria) and they are briefly described. The management of white fir was discussed.—*F. S. Baker*.

7747. KRUTINA. *Erfahrungen mit dem Anbau ausländischer Gehölze im Heidelberger Stadtwald*. [Experiences on growing exotic trees in the city forest of Heidelberg.] Mitteil. Deutsch. Dendrol. Ges. 32: 185-193. 1922.—The forest embraces 2780 ha. Some of the principal conifers and broad-leaved trees are briefly described.—*J. C. Th. Uphof*.

7748. LIESE. *Forstbotanische Mitteilungen*. [Forest-botanical communications.] Mitteil. Deutsch. Dendrol. Ges. 32: 181-183. 1 fig. 1922.—War explosives contain a substance that is poisonous to seed and plants. When oxidized it is harmless. The poison is more effective in loamy soil than on porous, sandy soil.—In many 10-20 year-old pine forests, a sudden loss of needles was observed on the young shoots, especially on branches which could move in a west to east direction, rubbing against other twigs or other objects.—A photograph is shown of a pine twig on which 260 cones had developed. Lacking nourishment, most of them were small.—*J. C. Th. Uphof*.

7749. MINCHIN, A. F. *Progress report of forest administration in Coorg for 1922-23. 18 + 15 p.* Bangalore, 1924.—Cultural experiments on important problems of sandal cultivation and teak reproduction are still inconclusive. Sandal is the chief revenue producer.—*S. B. Show*.

7750. NELIS, E. *Une excursion dans la Forêt de Fontainebleau*. Bull. Soc. Centrale Forest. Belgique 31: 3-16, 75-82. 2 pl. 1924.—This is an account of the 16,860 ha. forest of Fontainebleau in France. It is divided as follows: Broadleaved high forest, 7,136 ha.; coniferous high forest, 3,329 ha.; mixed high forest, 2,947 ha.; coppice under high forest, 1,855 ha.; aesthetic forest, 1,593 ha.—*H. T. Gisborne*.

7751. QUAIRIERE, C. J. *Le Parc d'Uytberghen*. [The Park of Uytberghen.] Bull. Soc. Centrale Forest. Belgique 31: 17-23. 2 pl. 1924.—During the past 50 years Count Visart has planted numerous exotic species to test their survival and growth. A few details are given for each of the following species: *Robinia pseudacacia*, *Ulmus campestris*, *U. americana*, *Maclura aurantiaca* (or *Toxylon pomiferum*), *Picea orientalis*, *P. ajanensis*, *P. morinda*, *Sequoia*

*gigantea*, *Araucaria imbricata*, *Cercidiphyllum japonicum*, *Sophora japonica*, *Thuja gigantea*, *Pinus strobus*, *P. cembra*, *Abies grandis*, *A. nobilis*, *A. pectinata*, *Chamaecyparis pisifera*, *C. nutkatensis*, *C. obtusa*, *Thuyopsis dolabrata*, *Tsuga mertensiana*, *T. canadensis*, *Juglans cinerea*, *J. nigra*, *Betula papyrifera*, *B. lenta*, *Liquidambar styraciflua*, *Quercus palustris*, *Q. alba*, *Q. rubra*, *Q. tinctoria*, *Q. cerris*, *Q. phellos*, *Q. imbricaria*, *Q. Michauxii*, *Taxodium distichum*, *Pterocarya caucasica*, *Tilia dasystyla*, *Magnolia acuminata*, *Parrotia persica*, *Catalpa speciosa*, *Liriodendron tulipifera*, *Populus balsamifera*, *Acer saccharum*, *A. dasycarpum*, *A. macrophyllum*, *Fraxinus americana*, *F. pubescens*, *Sorbus torminalis*, and *S. domestica*.—*H. T. Gisborne*.

7752. QUAIRIERE, C. J. Les champs d'experience de Belle-Etoile. [Experimental areas of Belle-Etoile, in the forest of Soignes.] Bull. Soc. Centrale Forest. Belgique 31: 83-96, 150-153. 1924.—Two clear-cut areas in the forest of Soignes were set aside for experimental purposes. The experiments include: (1) Determination of the procedure, the time, and the plant associations most favorable for reforesting cut-over areas with valuable species; (2) use of various species of pine in mixtures; (3) study of the effect of source of seed of *Pinus sylvestris*; (4) tests of exotic species; and (5) study of poplar varieties. The individual experiments are described in detail. No definite conclusions seem to have been reached.—*H. T. Gisborne*.

7753. R., E. Le bois de teak. [Teak wood.] Bull. Soc. Centrale Forestiere Belgique 31: 157-161. 1924.—The source of supply, and the characteristics and uses of the wood are described.—*H. T. Gisborne*.

7754. SCHNEIDER, CAMILLO. China, das dendrologische Paradies. [China, the dendrological paradise.] Mitteil. Deutsch. Dendrol. Ges. 29: 152-163. 1920.—*Plantae Wilsonianae* is mentioned as the handbook for dendrologists working on Chinese trees. Important trees and shrubs are listed, with the names of the authors who have treated the dendrology of various provinces of China.—*J. C. Th. Uphof*.

7755. SCHÖNWIESE, H. Das Wirtschaftsergebnis der österreichischen Bundesforste 1923. [Management of the Austrian state forests, 1923.] Wiener Allg. Forst- u. Jagdzeitg. 42: 295-296. 1924.—Information is given regarding the number of employees, the work accomplished, and the yields of the forests.—*F. S. Baker*.

7756. SCHWERIN, FRITZ VON. Altersschätzung bei Gehölzer. [Estimation of age of woody plants.] Mitteil. Deutsch. Dendrol. Ges. 29: 239-246. 1920.—The ages of very large trees are generally overestimated. The soil and moisture conditions, humidity of the air, density of the stand, and manuring must be considered when estimating the ages. The ages and sizes of several trees are given.—*J. C. Th. Uphof*.

7757. SCHWERIN, FRITZ VON. Dendrologische Notizen. [Dendrological notes.] Mitteil. Deutsch. Dendrol. Ges. 28: 168-189. 5 pl. 1919.—A pure forest of *Populus tremula* in Livonia is described. The wood is used for matches, aeroplanes, and automobiles.—The economic value of wax from various trees and shrubs is mentioned.—Among the conifers which do not recover easily after the stems have been cut off are *Ginkgo biloba*, *Abies nobilis*, and *A. magnifica*.—An interesting regeneration is demonstrated in *Sequoia sempervirens*, which produced narrow columnar stems after the twigs were burned off. *Taxus baccata* often behaves in the same way. *Pinus rigida* and *Abies grandis* recover easily.—The so-called *tardus* varieties of forest trees are valuable because they are slow in starting spring growth and thus escape late frosts and the damages of some of the early caterpillars.—A case is described where an *Ulmus* produced so much seed that no leaves were developed.—Bifurcation in *Aesculus Hippocastanum* is described.—*J. C. Th. Uphof*.

7758. SCHWERIN, FRITZ VON. Dendrologischen Notizen. XIII. [Dendrological notes. XIII.] Mitteil. Deutsch. Dendrol. Ges. 32: 73-93, 215-217. 8 pl., 7 fig. 1922.—Some plants from warm climates may do well when planted in colder regions; examples are *Acer Helreichii* and horse chestnut (*Aesculus*) from Greece, *Acer cinerascens* var. *medicum* from Persia, and *Cotoneaster nummifolius* from a region of similar climate.—Flattened roots have been observed on *Ulmus campestris* and *Carpinus betulus*.—Excentric rings of *Taxodium* are mentioned.—*Picea pungens perpendicularis* is a beautiful weeping tree.—*Pinus ponderosa* developed needles which were grown together.—A screw-like arrangement of *Lepiota mucida* around the stem of a beech is mentioned.—In an avenue, 70 year-old *Picea* died after a neighboring row of *Alnus* was removed.—In August, 1914, concussion of the air resulting from bom-



bardment caused a grapevine to lose its leaves.—Broad yellow margins of *Syringa* leaves were caused by malnutrition.—Deeply lobed leaves of beeches and horse chestnuts are due to spring frosts.—A partly dead tree of *Abies Veitchii* produced a vine-like twig which grew around another branch.—*J. C. Th. Uphof.*

7759. SCHWERIN, FRITZ VON. Die Bedeutung der Baumwelt Chiles für Deutschland. [The importance of the trees of Chili for Germany.] Mitteil. Deutsch. Dendrol. Ges. 28: 121-131. 4 fig. 1919.—In Germany there are but few trees of Chilean origin. The principal trees and shrubs of Chile are listed, accompanied by various remarks and data on geographical distribution and climate. Information is given on the behavior of some species in Germany and in other European countries.—*J. C. Th. Uphof.*

7760. SCHWERIN, FRITZ VON. Die Charkow-Pappel, *Populus charkowiensis* Schroed et Kitsch. [The Charkow poplar.] Mitteil. Deutsch. Dendrol. Ges. 28: 143-145. 1919.—*Populus charkowiensis* is a quick growing species with the lightest wood of any species of *Populus*. It is hardy in Germany, but freezes in the region of Petrograd.—*J. C. Th. Uphof.*

7761. SCHWERIN, FRITZ VON. Versuche mit der Lebenskraft des Holzes. [Experiments with vitality of wood.] Mitteil. Deutsch. Dendrol. Ges. 31: 188-191. 1921.—Examples are given of plants which start growing a considerable time after they have been planted. Sometimes conifers do not grow until a year after planting, apparently because the damaged roots are unable to supply sufficient food. Examples by other writers are mentioned also. Various physiological experiments are suggested in order to solve this problem.—*J. C. Th. Uphof.*

7762. SCHWERIN, FRITZ VON. Wüstenpflanzen für schlechtesten Sandboden. [Desert plants for the poorest sand soils.] Mitteil. Deutsch. Dendrol. Ges. 28: 131-135. 1919.—Germany has considerable areas which are sterile and dry. The writer recommends experiments with exotic plants from sterile soils, which may be of economic importance, provided they come from regions with climates similar to that of Germany. The vegetation of edges of deserts, oases, and tundras should be considered. *Haloxylon Ammodendron*, the "saxaul," and *Agriophyllum gobicum*, the "sulchir," of the Mongolians, are suggested. The 1st is a tree 3-4 m. high, which grows on bar sand and is eaten by camels. The 2nd reaches a height of 60 cm.; its seed is nourishing for men as well as for camels, horses, and sheep.—*J. C. Th. Uphof.*

7763. SMALES, C. B. Report on the forest administration in Burma for the year ending 31st March 1924. 197 p. Rangoon, 1925.—F. A. Leete, chief conservator, retired. An air survey was begun with success; the area of forest reserves was increased by 539 sq. miles; working plan projects were pushed, although they are still in arrears; and 5312 acres were planted. Research in forest products showed striking results. Fire protection is now attempted only on young plantations and areas under regeneration. Selection cutting only is used for teak, which is the principal source of revenue.—*S. B. Show.*

7764. TRAFFORD, F. Quinquennial review of forest administration in the Province of Assam for the years 1919-20 to 1923-24, with the progress report of forest administration for 1923-24. 23 + 59 + 2 p. Shillong, 1924.—During 5 years the area of reserved forest increased by 319 sq. miles, and remote forests have been opened up by construction of tramways. Last year, fires were bad in protected sal forests. Taungya plantations were increased; this is the best way of reproducing sal.—*S. B. Show.*

7765. ULBRICH, E. Die Flaum-Eiche, *Quercus lanuginosa* Lam. (*Q. pubescens* Willd.) als neuer Waldbaum Norddeutschlands, und ihre Nomenklatur. [*Quercus lanuginosa* Lam., a new forest tree for north Germany, and its nomenclature.] Mitteil. Deutsch. Dendrol. Ges. 34: 297-304. 1924.—*Quercus lanuginosa* was found in a forest in Odertal near Billinchen, Germany. Other localities are given. Its value as a forest tree is discussed.—*J. C. Th. Uphof.*

7766. WAHLENBERG, W. G. Sowing and planting season for western yellow pine (*Pinus ponderosa*). Jour. Agric. Res. 30: 245-251. 1925.—This is an account of experimental work conducted by the U. S. A. Forest Service from 1913 to 1920 at and near the Savenac nursery in western Montana. Conclusions are based upon observations of germination, seedling losses, and subsequent development, survival, and growth. The time of sowing in the fall or spring was found to have a greater influence on results than the season itself, and it is pointed out that the best time for sowing in either spring or fall should be determined experimentally before sowing is attempted. The studies show that for field planting of western yellow pine

in the northern Rocky Mountain region, stock resulting from spring sowing is much better for fall planting: while for spring planting there is but little difference between spring-sown and fall-sown stock. Spring sowing should be done as early in the spring as possible. Fall sowing should be done between September 7 and October 15. It is generally safer to sow this species in the spring than in the fall.—*Author*.

7767. WOLF, EGBERT. *Dendrologische Mitteilungen aus Russland*. [Dendrological contributions from Russia.] Mitteil. Deutsch. Dendrol. Ges. 34: 334-336. 1924.—*Larix sibirica* is a good forest tree around Leningrad; it is better than *L. occidentalis*. The latter grows more quickly but does not thicken rapidly. Birds destroy many cones of *L. europaea* and *L. sibirica* but none of *L. leptolepis*. Brief descriptions are given of 3 new conifers (*Microbiota decussata*, *Picea crassifolia*, and *Juniperus jarkendensis*) reported from Asia by V. L. Komarov.—*J. C. Th. Uphof*.

7768. WRANGEL, FRHR. VON. *Anbau von Populus canadensis*. Kernfaule bei *Populus tremula*. [Growing *Populus canadensis*. Heart decay of *Populus tremula*.] Mitteil. Deutsch. Dendrol. Ges. 32: 222-223. 1922.—Mixed plantations of *Populus canadensis*, with *Alnus* and *Fraxinus* in alternate rows, demonstrated that this poplar is a good forest tree, although some writers claim that it is not. It is unsuitable for loamy soils.—*J. C. Th. Uphof*.

7769. WRIGHT, H. L. Progress report of forest administration in the Jammu and Kashmir State for the year 1922-23 (Sambat 1979). 19 + *liv* p. Lahore, 1924.—The forest area was increased by 154 sq. miles. Only 15,130 acres were burned. Deodar reproduction was excellent. Receipts were about double the expenditures.—*S. B. Show*.

## GENETICS

ORLAND E. WHITE, *Editor*

(See also in this issue Entries 7591, 7602, 7626, 7635, 7638, 7644, 7837, 7871, 7883, 7927, 7943, 8111, 8114)

7770. AEBLY, J. [German rev. of: AEBLY, J. Über die Möglichkeit einer chemischen Deutung der Bastardbildung und Mendelspaltung. (The possibility of a chemical explanation of hybrid formation and Mendelian segregation.) Vierteljahrsschr. Naturforsch. Ges. Zürich 69: 39-51. 1924 (see Bot. Absts. 14, Entry 6292).] Arch. Rass.- u. Gesellschaftsbiol. 16: 324. 1925.

7771. BARKER, ALFRED F. Genetics and wool production. (British Cotton Indust. Res. Assoc.) Jour. Textile Inst. 15. P. 134-140. 1924.—The author discusses briefly the importance of Mendelism and theories of evolution to the sheep industry.—*Sewall Wright*.

7772. BLARINGHEM, L. Études sur le polymorphisme floral IV. Sexualité et métamorphose des épis de *Plantago lanceolata* L. [Studies on floral polymorphism. Sexuality and metamorphosis of the spikes of *P. lanceolata* L.] Bull. Soc. Bot. France 70: 717-725. Pl. 14. 1923.—Observations on sexuality in *Plantago lanceolata* variety *sylvatica* lead the author to the opinion that the ♀ condition is governed both by heredity and by environmental factors. By crossing ♀ plants of this variety with pollen from a teratological line he obtained a population 80% of which were teratological in greater or less degree.—*M. M. Lesley*.

7773. BLARINGHEM, L. Sur le dimorphisme sexuel des fleurs et la variabilité spécifique. [Sexual dimorphism and specific variability of flowers.] Bull. Soc. Bot. France 71: 265-272. Pl. 3-4. 1924.—Evidence is advanced to support the hypothesis that hermaphrodite flowers are usually larger than sexual ones. The author thinks that sudden changes in sexuality and form and size of flowers are often hereditary and suggests that flower-size dimorphism is a useful indication of a changed sexual state.—*M. M. Lesley*.

7774. BONNEVIE, KRISTINE. Studies on papillary patterns of human fingers. Jour. Genetics 15: 1-111. Pl. 1-4, fig. 1-37. 1924.—This is a general treatment of the history of the study of finger prints and especially their inheritance, by Galton and Wilder. It comprises a comparative study of incidence of occurrence of different types of patterns on each of the fingers, also for different nationalities. Asiatics have a larger proportion of whorls than Europeans, as 45 to 25. In general, brachycephals have relatively more whorls than



dolichocephals. All finger prints were classified by the breadth to height ratio of pattern into circular, medium and elliptical and these conditions tend to be rather constant on one set of fingers. The pattern is measured by counting the ridges from core to triradius on the one side in loops and both sides in whorls. Arches (having no triradii) fall into the 0 class; loops fall into the class measured by half the ridge count and whorls (with 2 triradii) with half the sum of the ridge counts. These are further grouped into classes having the values 0-10 so that the ridge count of any finger does not exceed 10 and hence for all 10 fingers can not exceed 100. The latter condition can be found only when all fingers have whorls, and the grade 0 means all fingers with arches. The numerical expression of an individual is the sum of the separate finger indexes. This sum shows a strong tendency to fluctuate within only narrow limits in a fraternity. Identical twins have sums which are similar. The higher finger index tends to be dominant over the lower and the results are best explained on the assumption of 5 pairs of dominant factors. When these are all present in duplex condition, the offspring tend to have the index sum of 100; when all are absent, the index sum of 0. The direction of opening of the loops is apparently not inherited. In a polydactylous individual the pattern of the extra finger was not a duplication of the neighboring one.—C. B. Davenport.

7775. BRAMBELL, F. W. ROGERS. Sex-determination in birds. Sci. Prog. 19: 257-265. 1924.—A summary is given of our knowledge of the factors governing sex, particularly those operating in birds. That sex is not irrevocably determined by the chromosome content is shown by the Whitman and Riddle experiments on the physiological control of sex in pigeons, and by numerous instances of hermaphrodites, gynandromorphs and sex reversal among birds. Although the sex chromosome is probably the chief factor underlying sex, such factors as nutrition, hormone action, and other metabolic and pathological conditions seem to play their parts.—L. A. Kenoyer.

7776. CLUTE, W. N. Changing the sex in plants. Gard. Chron. Amer. 29: 18. 1925.—The author refers particularly to the work of J. H. Shaffner on Green-dragon *Arisaema Dracontium* L. and Jack-in-the-pulpit *Arisaema triphyllum* L., wherein it appeared that starvation such as is produced by sterile soil leads to a staminate condition while good feeding is accompanied by a carpellate condition. A general survey of the occurrence of sexes in the plant kingdom is included.—J. P. Kelly.

7777. COFFMAN, FRANKLIN A., JOHN H. PARKER, AND KARL S. QUISENBERRY. A study of variability in the Burt oat. Jour. Agric. Res. 30: 1-64. Pl. 1-9, 1 fig. 1925.—The literature on the history, importance, distribution, description and classification of the Burt variety, and on breeding experiments with oats with special reference to the characters considered in this study, is reviewed. A detailed morphological description of oat spikelets is presented. The remarkable variability of Burt oats was disclosed by a study of 5 characters; spikelet disarticulation, floret disjunction, basal hairs, awns, and lemma color. (1) Spikelet disarticulation by fracture of the rachilla segment, typical of *Avena sativa*, predominated and bred true in some strains. That resulting from abscission, as in *A. fatua*, bred true, indicating a recessive condition. (2) Floret disjunction, or separation by disarticulation at base of the upper floret, as in *A. sativa*, predominated and bred comparatively true, whereas that resulting from basifracture, as in *A. sterilis*, often proved unstable in breeding. (3) Basal hairs proved complex in breeding. Abundant long hairs were heritable to a high degree and may constitute a recessive condition. (4) Several awn conditions exist in Burt, the twisted awn breeding comparatively true and being apparently recessive. (5) Lemma color proved variable, dark-colored individuals, however, tending to produce dark-colored progeny and light-colored individuals light-colored progeny. Although variation was great, correlation was found to exist between: (1) spikelet disarticulation and floret disjunction; (2) spikelet disarticulation and basal hairs; (3) spikelet disarticulation and awns; (4) spikelet disarticulation and lemma color; and (5) awns and lemma color.—Variation was observed also in growth habit; color of leaf and time of heading and ripening. Aberrants are described, including one showing a chlorotic condition of the leaves, one with multiflorous spikelets, one with loose palea, and false wild forms. The writers consider Burt to belong to *Avena byzantina*, the species accepted by many European taxonomists as comprising the cultivated descendants of *Avena sterilis*, and they recommend that this name be used by the American workers in place of *Avena sterilis*.—F. A. Coffman.

7778. COLLINS, J. L. **Inheritance in *Crepis capillaris* (L.) Wallr. III. Nineteen morphological and three physiological characters.** Univ. California Publ. Agric. Sci. 2: 249-296. Pl. 45-52. 1924.—Seed obtained from various places in Europe, Asia, and North and South America show this species to exist in many forms or varieties and to be heterozygous for many recessive genes. Inbreeding caused a reduction in size, vigor, and fertility and increased the vegetative period. Heterosis is evidenced when inbred strains are crossed. One recessive character, absence of bud pubescence, appeared in cultures from 5 different countries. Two character contrasts gave 15 to 1 ratios. The possibility of duplicate chromosomes being the cause of the appearance of this ratio is eliminated because there are but 3 pairs of chromosomes, no 2 being enough alike to be considered as duplicates. Three pairs of characters gave 9-7 ratios. Several leaf types were isolated by selection, many of which were probably due to isolation of particular sets or combinations of modifying genes, since when such races were crossed, intergrading forms resulted. The cross between the 2 extreme leaf forms gave intermediate in  $F_1$  and 1:2:1 in  $F_2$ . Both dominant and recessive chlorophyll variations were found. The dominant gene was lethal when homozygous.—*Author*.

7779. DAHN, FR. **Grüne Rückschläge an *Fagus sylvatica atropurpurea pendula*. [Green reversion in *Fagus sylvatica atropurpurea pendula*.]** Mitteil. Deutsch. Dendrol. Ges. 29: 332. 1920.—A tree of *Fagus sylvatica atropurpurea pendula* has produced a green twig on the same side of the plant every year for the past 15 years. This twig is regularly removed, but always grows again.—*J. C. Th. Uphof*.

7780. DAKIN, W. J., AND W. G. C. FORDHAM. **The chemotaxis of spermatozoa and its questioned occurrence in the animal kingdom.** British Jour. Exp. Biol. 1: 183-200. 2 fig. 1924.—The authors obtained decided positive results in experiments to determine the presence of chemotaxis between animal eggs and sperms using *Echinus esculentus*, but negative results in certain other cases. Capillary tubes containing egg extracts or other substances were tested in sperm suspensions. Extensive invasion of the tubes and plugging of the mouth occurred only with egg extracts from the same species. Critical experiments indicated that the effect was not due to immobilization and trapping but to a true chemotaxis.—*Sewall Wright*.

7781. DICKIE, FRANCIS. **Buffalo cross breeding.** Nation. Stockman and Farmer 47<sup>11</sup>: 6 (286). 2 fig. 1923.—The author describes briefly the efforts of the Canadian government in raising bison and crossing with beef cattle. The characteristics of the hybrids are described. Experiments on the crossing of yak with cattle and bison have been begun.—*Sewall Wright*.

7782. FAURE, CH.-L. **Note sur un schéma original de la spermatogénèse chez les mammifères. [An original scheme for spermatogenesis in mammals.]** Bull. Soc. Hist. Nat. Toulouse 50: 205-209. 1 fig. 1922.—The author presents a diagram which he has found useful in presenting the cycle of events in the spermatogenesis of a mammal. It is based on a statistical study of the frequency of different stages in the testes of guinea pigs.—*Sewall Wright*.

7783. FRETS, G. P. **Mendelismus und Medizin. [Mendelism and medicine.]** Studia Mendeliana. P. 60-64. Typos: Brünn, Czechoslovakia, 1923.—The author cites several recent articles dealing with this subject. From his own studies it appears that differences of the cephalic index or head form are hereditary. A system of 3 multiple allelomorphous pairs of genes are suggested for certain differences in the cephalic index. The possible genic relations associated with dementia praecox, "manisch-depressive Psychose" and the normal condition, are discussed.—*J. L. Collins*.

7784. GÄNSSLE. [German rev. of: LANZ, FRITZ. **Erblichkeitslehre und Rassenhygiene (Eugenik). (Heredity and race hygiene (eugenics).)** In: HALBAN, SEITZ. **Biologie und Pathologie des Weibes. I.** P. 803-868. Urban u. Schwarzenberg: Wien and Berlin, 1924.] Arch. Rass.-u. Gesellschaftsbiol. 16: 327-328. 1925.

7785. GOLDSCHMIDT, RICHARD. **Einführung in die Vererbungswissenschaft. [Introduction to the science of heredity.]** 4th ed. 547 p. 176 fig. Wilhelm Engelmann: Leipzig, 1923.—Many additions occur in the 4th edition, of this well known work. The principal changes are found in chapter 13 which contains our present views on heterogamy, luxuriance and inbreeding. The 16th chapter describes, chiefly, the work and views on species hybrids. Chapter 17 gives the present concept of the mutation theory.—*J. C. Th. Uphof*.



7786. H., J. S. Sexuality and hormones. [Rev. of: CHAMPY, CH. *Sexualité et hormones: les caractères sexuels considérés comme phénomènes de développement et dans leurs rapports avec l'hormone sexuelle.* (Sexuality and hormones; sex characters considered as phenomena of development and in their connection with the sexual hormone.) 376 p. 7 pl. Gastoin Doin: Paris, 1924.] *Nature* 115: 7-9. 1924.

7787. HERMANN. Zur Frage der Rassenbildung bei der Keifer. [Breeding pine varieties.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 75-80. 1924.—The writer mentions the selection of suitable races for the improvement of the forest. *Pinus silvestris* possesses several climatological races with heritable characteristics. With P. K. Schott, the author distinguished 9 races for example, *P. lapponica* in Lapland, Middle and Southern Scandinavia and northern Finland; *P. septentrionalis* in southern and western Scandinavia, and northwestern Russia; *P. borussica* of the northeast German flat lands; *P. scotica* from Scotland; *P. batava* of the Lower Rhine region; *P. superrhenana* of the Upper Rhine region; *P. vindelica* of the northern Voralpes; *P. panonica* of the western Hungarian hill lands and *P. aquitana* of southern France. In 1900, seed merchants distributed throughout Germany seed from France and Hungary, which were not suitable for their new locality. Since that time many have expected guaranteed seed obtained from native trees. Descriptions are given of trees of various races which are being grown under different climatic conditions.—*J. C. Th. Uphof.*

7788. HERRE. Ueber Bastardierungen amerikanischer Eichen. [Hybridization of American oaks.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 223-224. 1922.—In Wörlitz there originated forms of *Quercus palustris* × *Q. phellos*, often known as *Q. Schochiana*. It was stated at first that such plants do not produce good seed. Some seed, however, produced young plants having the appearance of the mother plant.—*J. C. Th. Uphof.*

7789. HICKMAN, CLEVELAND P. Spermatogenesis of *Succinea oralis* Say. *Nature* 115: 86. 1925.—This is a brief preliminary report.—*O. A. Stevens.*

7790. KOBEL, F. Fortschritte der Vererbungslehre im letzten Jahrzehnt und ihre Bedeutung für die Pflanzenzucht. [Progress of genetics in the last decade and its significance for plant breeding.] *Mitteil. Naturf. Ges. Bern* 1924: XLVII-LI. 1925.—The article gives a short summary of the advance in knowledge of genetics and of cytological research in the last decade and of its importance to plant breeding.—*S. Blumer* (Translated by D. I. Neff).

7791. KOFOID, C. A. [Rev. of: HUNTINGTON, ELLSWORTH. The character of races as influenced by physiological environment, natural selection and historical development. xvi + 391 p., 19 pl. Charles Scribner's Sons: New York, 1924 (see Bot. Absts. 14, Entry 6301).] *Amer. Jour. Public Health* 15: 349. 1925.

7792. KÜSTER, ERNST. Beiträge zur Kenntnis der panachierten Laubgehölze. [Variegated trees and shrubs.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 85-88. 1 fig. 1919.—Description is given of a specimen of *Acer campestre* with white margined leaves. This is the rarest type of variegation.—*J. C. Th. Uphof.*

7793. KÜSTER, ERNST. Zur Kenntnis der panachierten Gehölze III. [Variegated trees and shrubs. III.] *Mitteil. Deutsch. Dendrol. Ges.* 31: 141-143. 1 fig. 1921.—Variegated leaves are described which have a white or yellow margin of uneven width.—*J. C. Th. Uphof.*

7794. KÜSTER, ERNST. Zur Kenntnis der panachierten Gehölze IV. [Variegated trees and shrubs. IV.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 110-112. 1 fig. 1922.—The writer considers some variegated conifers. One individual of *Picea pungens* showed a combination of sectorial and of marmorated variegation.—*J. C. Th. Uphof.*

7795. KÜSTER, ERNST. Zur Kenntnis der panachierten Gehölze V u. VI. [Variegated trees and shrubs. V and VI.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 183-188. 1923.—The writer cites under progressive variegation (Panachierung), instances where the variegated twigs become more and more variegated, the green color gradually disappearing. The reverse takes place in regressive variegation where the green color gradually comes to predominate. Examples in *Ulmus* are given.—*J. C. Th. Uphof.*

7796. KÜSTER, ERNST. Zur Kenntnis der panachierten Gehölze VII. [Variegated trees and shrubs. VII.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 136-139. 2 pl. 1924.—There are several variegated varieties of *Hedera Helix* including some wild plants. The writer mentions the connection between variegated leaves and the appearance of the leaf margin. *Hedera Helix marmorata* is described as an example of a plant with marbled leaves.—*J. C. Th. Uphof.*

7797. LÉCAILLON, A. Sur la variabilité de la pigmentation et la théorie des mutations considérées chez le Bombyx du Mûrier. [Variation in the pigmentation of the mulberry Bombyx and the mutation Theory.] Compt. Rend. Soc. Biol. 91: 347-349. 1924.—The author would restrict the term "mutation" to sudden discontinuous changes, even though they are not immediately inherited. Thus, hereditary color differences of larvae of various races appearing gradually in later instars are not regarded as mutations. The production of colorless eggs, which are normally characteristic of bivoltine races, in occasional bivoltine broods of univoltine races normally laying yellow eggs, is called mutation.—P. W. Whiting.

7798. LENZ. [German rev. of: *Eugenics in race and state*. Vol. II of the 2nd International Congress of Eugenics. 472 p. 20 fig. Williams & Wilkins Co.: Baltimore, 1923.] Arch. Rass.- u. Gesellschaftsbiol. 16: 333-337. 1925.

7799. LESLEY, J. W., and MARGARET C. MANN. Triploidy in the tomato. Science 61: 208. 1925.—Two triploid plants have appeared in California. The several organs including the flowers are normal in form but are generally "gigantic." The fruit are small and few-seeded. The chromosome count showed the somatic number to be 36 in place of the typical 24 for the tomato [*Lycopersicum esculentum*].—C. J. Lyon.

7800. LONGO, B. Ulteriori osservazioni sopra una interessante pianta d. *Idesia polycarpa* Maxim. [Ulterior observations on an interesting plant of *Idesia polycarpa* Maxim.] Ann. Bot. 16: 187-188. 1924.—The author refers to his report about a stamiferous plant of *Idesia polycarpa* in the Botanical Garden of Pisa, which suddenly changed sex completely. The plant continued being pistilliferous for 2 more years, showing even signs of initial parthenocarp, but it died while being experimented with to find out whether pruning had any effect on the change of sex.—P. D. Caldis.

7801. MALLOCH, W. S. Asexual propagation as an aid to the breeding of rootstocks. Jour. Agric. Res. 29: 515-521. Illus. 1924.—It is often desirable in testing horticultural varieties to eliminate the variability which is common in seed propagated rootstocks and this can best be done by asexual propagation of such stocks. A test was made at Berkeley, California, to determine the rooting of a large number of cuttings of many species and varieties, principally of *Prunus*, *Pyrus*, and *Ficus*. It became necessary to terminate this test after about 3 months and though certain conditions were not ideal for the experiment it is believed that the considerable number of cuttings which rooted under the slightly unfavorable conditions indicate that greater success should follow under improved conditions. A summary is presented of all the varieties which formed roots or a callus.—C. S. Pomeroy.

7802. MANN, M. C. Chromosome number and individuality in the genus *Crepis*. I. A comparative study of the chromosome number and dimensions of nineteen species. Univ. California Publ. Agric. Sci. 2: 297-314. Pl. 53. 1925.—All of the known methods by which chromosome number might be increased must be invoked to explain the origin of the wide variations in number and size shown by *Crepis* species. However the species fall into groups on the basis of chromosome individuality, indicating that it may be of use in taxonomic studies. The evidence based on unusually favorable cytological material shows that it is entirely unsafe to assume that even closely related species which have the same chromosome numbers are identical in individuality; or to assume polyploidy unless the sizes of the chromosomes have been compared.—Author.

7803. MARTIN, HERMANN. *Berberis stenophylla* Lindl., Art oder Bastard? [*Berberis stenophylla* Lindl., species or hybrid?] Mitteil. Deutsch. Dendrol. Ges. 33: 192-194. 1923.—According to the Gardeners Chronicle, 1864, *Berberis stenophylla* is a hybrid between *B. empetrifolia* and *B. Darwinii*. Usteri, however, considers it as a species. The writer found that, as in species hybrids, the plants produce but few seed, many of which do not germinate. From this standpoint the writer concludes that *B. stenophylla* is a hybrid.—J. C. Th. Uphof.

7804. MARTIN-SANS, E. Graphiques pour l'étude de deux caractères fluctuants. Champ de variation. [Scheme for the study of two variable characters.] Bull. Soc. Hist. Nat. Toulouse 50: 48-77. Fig. 1-9. 1922.—An elementary but thorough exposition is given of the graphical method of dealing with statistical data illustrated by application to measurements of length and breadth of mistletoe leaves. The author discusses the method of collecting data, of constructing a correlation table and frequency polygons, and of determining the characteristic constants for the 2 frequency distributions. He then considers correlation of



length and breadth on the basis of the length to breadth ration. Distribution of values indicates that the population under study was a mixture of 2 types, and further graphic determination of the position of the regression lines led to the same conclusion. The author then considers the characteristic features of the correlation surface in detail, emphasizing particularly the central region of high frequency and the periphery and describing methods for determining the limits of these areas and their employment for comparing different sets of materials.—*R. E. Clausen.*

7805. MYERS, C. E. Statistical studies of inheritance in the tomato. A statistical comparison between parental forms and certain segregates in a cross of the common garden tomato, *Lycopersicum esculentum*, by pear tomato, *Lycopersicum pyriforme*, and the significance of these differences as illustrated by certain statistical constants. Pennsylvania Agric. Exp. Sta. Bull. 189. 1-30. *Illus.* 1924.—Comparisons were made between certain parental forms and what seemed from ordinary methods of observation to be pure recessives of a cross between 2 varieties of tomatoes having pronounced contrasting characters. The characters studied were number of fruits per plant, average weight of fruits per plant and total weight of fruit per plant. From a biometrical analysis of the data on counts and weights of the crop for the entire season, it was found that in practically every instance the differences between the parent and the abstracted type were decidedly and clearly recognized. The characters measured were doubtless the expression of the combined action of several genetic factors.—*F. J. Pritchard.*

7806. NORTON, J. B. S. Some interesting work on tomato seed breeding and selection. Seed World 17: 12. *Illus.* 1925.—Tomato seed that is to be used in wilt-infested regions, which include practically all the southern and eastern tomato producing states, should be saved from wilt-resistant strains or varieties. Greater use should also be made of 1st generation hybrids to increase tomato yields. Fermentation, pollination, and the technique of crossing are also discussed.—*F. J. Pritchard.*

7807. PARKES, A. S. The factors governing the mammalian sex ratio. Sci. Prog. 18: 426-435. 1924.—The author summarizes the work done on sex determination by the sperm in the heterozygous males of mammals, and also notes statistics which throw light upon the sex ratio in man and other mammals. Males usually predominate at birth, and, since prenatal mortality is higher among males than among females, they predominate even more at conception. He points out that equality of sperm ratio does not necessarily imply equality of birth ratio or even of conception ratio for the sexes, since the difference in chromosome content of the sperms may give to one sort the advantage in longevity or in mobility toward the egg.—*L. A. Kenoyer.*

7808. PLATE, L. [German rev. of: PUNNETT, R. C. Heredity in poultry. xi + 204 p. 28 fig. Macmillan & Co. Ltd.: London, 1923 (see Bot. Absts. 13, Entry 877).] Arch. Rass.-u. Gesellschaftsbiol. 16: 320-324. 1925.

7809. PLATE, L. [German rev. of: REINKE, J. Kritik der Abstammungslehre. (Critique of present knowledge of heredity.) 133 p. A. Barth: Leipzig, 1920.] Arch. Rass.-u. Gesellschaftsbiol. 16: 318-320. 1925. (See also Bot. Absts. 9, Entry 1303.)

7810. PRITCHARD, F. J. Tomato wilt and varietal resistance. Seed World 17: 7-9. *Illus.* 1925.—Tomato wilt is most common in the South Central and Southeastern States and in the coastal region of California, but it occurs also in many fields in the Middle East and Middle West, and is found in small amounts in Utah, Colorado, Kansas, Nebraska, the Dakotas, and all states east of the Mississippi river. Wilt is disseminated chiefly through seed and plants. Tomato seed produced on wilt-infested soil is quite commonly infected by the wilt fungus, *Fusarium lycopersici*. This often happens even in wilt-resistant varieties and, in the presence of blight and other diseases, is likely to be overlooked. Southern-grown tomato plants, now used extensively in the North, are not infrequently grown in wilt-infested soil and therefore carry the disease. The wilt fungus grows at temperatures ranging from 36 to 97°F. but wilt develops only between the temperatures 70 and 92°. The optimum temperature for the development of both the fungus and the disease is about 85°. Although wilt is possessed in different degree by different varieties and fluctuates somewhat with temperature and other factors affecting the host and parasite, it is apparently as permanent as other characters of the tomato. Tomato varieties highly resistant to wilt possess more than average

resistance to most other tomato diseases, such as Septoria blight, early blight, nail-head rust, and leaf mold. The comparative wilt resistance of some of the most commonly used and best known varieties tested at the Arlington Experimental Farm is as follows: (1) Highly resistant varieties: Marvel, Arlington, Columbia, Norton, Norduke, Marvana, Marvelosa, Marglobe, Edgerton's Wilt-Resistant, Louisiana Red, Louisiana Pink, Duke of York (Hastings), Buckeye State, Globe (partly resistant), and some Tennessee selections; (2) slightly resistant varieties: Marvel of the Market, Red Currant, Michigan Early, Crimson Cushion, Trophy, Mansfield Tree, and Comet; (3) susceptible varieties: Matchless, Stone, Greater Baltimore, Success, Red Rock, Ten Ton, Mississippi Girl, Tenderloin, Acme, Ponderosa, Hummer, Enormous, Red Majestic, Perfection, Dwarf Champion, Earliana, Burbank, Avon Early, Carter's Sunrise, Grand Rapids Forcing, Alacrity, Early Detroit, Armstrong's Marvel, Bolgiano, Danish Export, Red Cherry, and Strawberry or Husk; (4) very susceptible varieties: Bonny Best, John Baer, Chalk's Jewel, Beauty, Red Head, Royal Red, and Delaware Beauty. Wilt is best controlled by the use of crop rotation and wilt-resistant varieties. Three promising new wilt-resistant varieties are Marvana, Marvelosa, and Marglobe.—*Author.*

7811. ROBINSON, T. R. **Breeding work with reference to citrus stocks.** Proc. Florida State Hort. Soc. 37: 25-29. 1924. (For abstract see Bot. Absts. 14, Entry 4393.)

7812. SCHAFFNER, JOHN H. **Experiments with various plants to produce change of sex in the individual.** Bull. Torrey Bot. Club 52: 35-47. 1925.—Experiments are reported on *Thalictrum dioicum*, *Cannabis sativa*, *Morus alba*, *Arisaema triphyllum*, and *A. Dracontium*, in which varying amounts of sex-reversal were obtained. "All of these experiments add decidedly to the weight of the accumulating evidence that sexuality is primarily a physiological condition, that it is primarily not at all Mendelian in nature and not amenable to Mendelian analysis; that it can frequently be controlled and reversed at will, even with our present crude methods, and that it is preeminently a subject for ecological and physiological experimentation."—P. A. Munz.

7813. SCHEIDT. [German rev. of: DAVENPORT, C. B. **Body-build and its inheritance.** Carnegie Inst. Washington Publ. 329. vi+176 p., 9 pl., 53 fig. 1924 (see Bot. Absts. 14, Entry 1379).] Arch. Rass.- u. Gesellschaftsbiol. 16: 326-327. 1925.—(See also Bot. Absts. 13, Entry 843.)

7814. SCHEIDT. [German rev. of: PAINTER, TH. S. **Studies in mammalian spermatogenesis.** Jour. Exp. Zool. 37: 291-335. 6 pl., 4 fig. 1923 (see Bot. Absts. 13, Entry 5857).] Arch. Rass.- u. Gesellschaftsbiol. 16: 324-325. 1925.

7815. SCHWERIN, FRITZ VON. **Plötzliches Ausbleiben einer bisher konstante Panaschierung. [A sudden ceasing of a constant variegation.]** Mitteil. Deutsch. Dendrol. Ges. 34: 354-355. 1924.—A tree of *Acer campestre pulverulentum* on the estate of the writer has been very constant to date as far as variegation of the leaves is concerned. It was pruned back every 2 or 3 years, after which it produced its usual leaves. After pruning in 1923, however, only twigs with pure green leaves were produced, with the exception of 1 small twig near the roots, which remained variegated.—J. C. Th. Uphof.

7816. SEITZ. **Rassenzucht im Walde. [Race breeding in the forest.]** Mitteil. Deutsch. Dendrol. Ges. 34: 6-12. 4 pl. 1924.—The writer emphasizes the necessity of breeding good races of forest plants. During the long period of forest development, through hybridization and mutation many individual trees change their original characters and their progeny form special races, among which some are not adapted to the environment and degenerate, whereas the remainder develop into forests. Human influence changed the virgin forests greatly and by using seed without any proper selection, the forest has approached to a certain extent a *status quo ante*. If we should leave a forest untouched this same natural process would be repeated. It is impracticable to wait for this condition to come about; therefore, offspring should be selected from a worthy parentage which has already established itself. The influence of cross pollination, even over a large area is mentioned, also susceptibility to disease, drought and cold. When seed are collected from individual trees and compared, it is noticeable that there are as many differences among them as exist between varieties of fruit trees. The foundation of breeding is the selection of mother trees. These, if possible, should be somewhat isolated in order to obtain good seed. The influence of the ♂ parent



has to be considered, and in connection with this the direction of wind during the time of flowering. Examples in species of oak are given.—*J. C. Th. Uphof.*

7817. SNYDER, LAWRENCE H. The inheritance of the blood groups. *Genetics* 9: 465-478. 1924.—A thorough review of the literature of blood groups in man and the lower animals is presented. The 4 well-established blood groups in man appear to depend upon the existence of 2 specific agglutinogens and corresponding iso-agglutinins. Heredity follows a Mendelian scheme based on 2 pairs of factors, the dominant member of each of which determines production of a specific agglutinogen, *A* or *B*; the recessive member, when homozygous, production of the corresponding iso-agglutinin, *a* or *b*. This scheme may eventually have to be extended to recognize the existence of additional agglutinogens and iso-agglutinins. Agglutinogens are present at birth but iso-agglutinins may be delayed several months in appearance. Medico-legal application to the question of paternity is discussed, and evidence is offered for stability of blood groups. Existence of blood groups in lower animals is doubtful. The author made about 2000 combinations of serum and corpuscles in rabbits, but failed to secure agglutination.—*R. E. Clausen.*

7818. SPRENGER, CARL. Mitteilungen über meine Yucca-Hibriden und -Formen. [My Yucca hybrids and forms.] Mitteil. Deutsch. Dendrol. Ges. 29: 96-138. 1920.—All Yucca species and hybrids without exception produce fruit along the Mediterranean and in Italy. It is easy to hybridize various species of Yuccas; they all produce fruit and good seed, provided that pollen of the late flowering varieties is kept for those which flower early. Such pollen remains good for months when kept air tight. The gigantic *Yucca elephantipes* from South America can be successfully hybridized with the stemless species from the northern hemisphere. Species which flower at different times can be retarded in a cold place and brought to flower at the desired time. Several species of *Yucca* are described as to hybridization possibilities. A description is given of 112 different hybrids and forms of Yuccas obtained by the writer on the Island of Corfu.—*J. C. Th. Uphof.*

7819. STOUT, A. B. The clonal variety in horticulture. Jour. Hort. Soc. New York [City] 4: 58-78. Illus. 1924.—This is a discussion of clonal varieties, their propagation and certain of the disadvantages arising from such propagation in horticultural practice. Means of vegetative propagation of certain plants remain to be discovered and it is probable that more congenial stocks will be found that are now commonly used, on which to propagate many of our fruit crops. The possibility of the occurrence of bud variations must be recognized and such forms taken into account. Many variegated and cut-leaved types of ornamentals and certain types of flowers have arisen as bud sports. Selection of propagating material from the most typical individuals of a variety is a sound method in all vegetative propagation, though this may be avoided by the selection of healthy propagating material. Self-sterility, intersexes and incompatibilities are conditions common to a number of fruits or clonal strains, which should be recognized by the horticulturist and interplantings made or other methods adopted to insure profitable fruit production.—*C. S. Pomeroy.*

7820. TINIUS, FR. [German rev. of: PERALTA, M. La talla militar argentina. (The large Argentine soldiers.) Buenos Aires, 1922.] Arch. Rass.- u. Gesellschaftsbiol. 16: 327. 1925.

7821. VANDENDRIES, R. L'hétéro-homothallisme dans le genre *Coprinus*. [Hetero-homothallism in the genus *Coprinus*.] Bull. Soc. Roy. Bot. Belgique 57<sup>2</sup>: 139-146. 1925.—The author reviews previous studies and after having observed some of the most characteristic cases of homothallism or heterothallism among the species of the genus *Coprinus*, recognizes that certain species, such as *C. radians* ought to be considered as hetero-homothallic, that is to say, there exists in one individual, a preliminary vegetative haploid phase, followed later by a diploid stage. Recent investigations are engaged in determining whether other species can produce the same changes. We have no doubt whatsoever as to the result of these researches.—*É. De Wildeman (Translated by D. I. Neff).*

7822. WALLIS, WILSON D. Do the characteristics of prehistoric human remains imply a common ancestry for man and apes? Amer. Nat. 59: 62-69. 1925.—The author contends that increasing resemblance to apes as we go back through a series of prehistoric human remains may be accounted for by changes in food and posture, and consequently do not necessarily imply simian ancestry.—*R. E. Clausen.*

7823. WILDER, INEZ W. Variations in the premaxillary of *Eurycea bislineata*. Amer. Nat. 58: 534-543. 3 fig. 1924.—The usual type of premaxillary in *Eurycea bislineata* has 2 ascending processes unfused at the mid line. Five out of 109 specimens from 1 locality had ascending processes fused to an unusual extent, one of the most conspicuous fusions being in a young larva where processes are normally quite divergent. Fused ascending processes are in most cases somewhat narrower than the sum of 2 unfused ones shown by control. Examples of unusual type have been found in both sexes and from 2 different localities, western Massachusetts and Long Island. Some families (Proteidae, Cryptobranchidae, Sirenidae, Hynobiidae, Ambystomidae) show the paired, unfused type. Amphiumidae show the unpaired, fused type. Salamandridae and Plethodontidae have both types, some genera with the paired form, others the unpaired type with varying degrees of fusion. *Eurycea bislineata* includes both extremes and thus covers differences existing between different genera. Fusion has been reported in other species of *Eurycea*. The author concludes that this character should not, therefore, be considered of taxonomic importance. Species should not be described from 1 or 2 specimens. Range of variation may in itself be of greater importance in indicating systematic relationships than a single type regarded as a constant character for a genus or species.—Anna R. Whiting.

7824. YOUNGMAN, W., AND S. C. ROY. Pollination amongst the lesser millets. Agric. Jour. India 18: 580-583. 6 fig. 1923.—The smaller millets, *Panicum miliare*, *Panicum crus-galli* var. *frumentaceum* and *Paspalum scrobiculatum*, are almost entirely self-pollinated with a resulting remarkable uniformity in the crop. A field study reveals few varieties. In *Panicum miliare*, crossing is prevented by the short duration of flowering (15-20 minutes) and by the small number of flowers open simultaneously. Full details of pollination are given of the 2 varieties of *Panicum*. In *Paspalum scrobiculatum* only 5% of the flowers open, the rest are cleistogamous.—A. Howard.

7825. [ZAITSEV, G. S.] Зайцев, Г. С. Междувидовой гибрид ♀ Gos. herbaceum L. X ♂ Gos. hirsutum L. var. laciniata (v. nova). [A hybrid between ♀ *Gossypium herbaceum* L. and ♂ *G. hirsutum* L. var. *laciniata* n. var.] Труды по прикладной Ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13: 117-134. 1922-1923. [1924].—Of many previous endeavors to cross cottons of the Asiatic and American groups, the only successful one is said to have been that of Gammie who worked with *Gossypium arboreum roseum* (Asiatic) and *G. hirsutum* (American). A. G. Nikolajeva found the somatic cells to contain 26 chromosomes in the Asiatic group (*G. herbaceum*, *G. Nanking*, *G. obtusifolium*) and 52 chromosomes in the American group (*G. punctatum*, *G. hirsutum*, *G. mexicanum*, *G. barbadense*). The author conceived that the failure of most attempts was owing to the slow rate of growth of the tubes of the foreign pollen and the early dehiscence of the style. By removing corolla and staminal column in the bud, the receptiveness of the pistil was prolonged and application of pollen of an okra-leaf type of *G. hirsutum* to pistils of *G. herbaceum* resulted in the setting of seed. The  $F_1$  was intermediate in most respects but the dominance of the male parent was shown in 2 characters and heterosis also was shown. More than 500 flowers were produced by  $F_1$  plants but none self-fertilized, all having been shed a few days after anthesis. Reciprocal cross pollinations of hybrid with either parent and with other representatives of the 2 groups (Asiatic and American) were equally unsuccessful. This is attributed by the author to imperfect maturation of pollen (and probably also of egg cells) of the hybrid.—T. H. Kearney.

7826. [ZAITSEV, G. S.] Зайцев, Г. С. К вопросу о плодообразовании при междувидовых хлопчатника. [The fructification of inter-species hybrids of cotton.] Труды по прикладной Ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13: 91-115. 4 pl. 1924.—Reviewing results described in the paper abstracted above (see preceding Entry) the author suggests that it may be possible to obtain viable seed from the hybrid plants by making cross-pollinations early in the season, on a more extensive scale, when shedding is less severe.—T. H. Kearney.



## HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 7587, 7603, 7622, 7631, 7632, 7723, 7731, 7758, 7799, 7801, 7805, 7806, 7810, 7819, 8002, 8003, 8111, 8175)

7827. ANONYMOUS. A suggestion about trees to plant. Bull. Green Section U. S. Golf Assoc. 5: 29-30. 1925.—For planting around golf courses trees should be used which are quick growing and whose leaves when dry are not large enough to hide a golf ball. The writer suggests the paper, red and yellow birch, American and green ash, honey and black locust, pin and scarlet oak, American and English elm and Salisburia.—*L. W. Kephart*.

7828. ANONYMOUS. *Deutsche Seidenbau*. [German silk growing.] Mitteil. Deutsch. Dendrol. Ges. 28: 189-193. 1919.—Silkworm raising in Germany is recommended. The mulberry, *Morus alba*, should be planted in hedges in autumn or in spring; plants 2-3 years old are recommended. Pruning should be done in summer in order to obtain young shoots the following spring. Hedges should not be kept much higher than 1.5 m.—*J. C. Th. Uphof*.

7829. ANONYMOUS. *Kaffee in Yemen*. [Coffee in Yemen.] Tropenpflanzer 23: 55-56. 1920.—In Yemen, Arabia, coffee is grown in the lower and middle section of the Serat mountain land, at an elevation 1100-2000 m., especially in the irrigated valleys on loose, deep soil of volcanic origin, where the roots are able to penetrate deeply into the soil. The fig is used as a shade plant. The best coffee comes from Hodeida and Aden. Plantations are on the west and south exposures. Climatic conditions are described. Coffee growing is very primitive; no modern tools are used. The natives drink a decoction of the berries, called kichr.—*J. C. Th. Uphof*.

7830. ANONYMOUS. *Tee im Kaukasus*. [Tea in Caucasia.] Tropenpflanzer 22: 376. 1919.—In 1914 there were 242 tea plantations in Batum, covering 835 desjatines. One half belonged to the fiscus. Tea raising is especially successful along the coastal strip 50 km. long and 5-10 km. wide, covering about 300-400 square km.—*J. C. Th. Uphof*.

7831. ALLEN, F. W. *Cropping between tree rows*. Amer. Fruit Grower 45<sup>4</sup>: 8, 37. *Illus.* 1925.—After pointing out that when an orchard is planted the trees are the main crop, the author briefly discusses the fundamental principles involved in intercropping and the selection of the intercrop to be grown. Vegetables and small fruits, both of which are extensively grown in California orchards, are discussed with regard to their possibilities as intercrops.—*Arthur S. Rhoads*.

7832. AMBROZY-MIGARZI, ISTVAN. *Aus meiner Malonyaer Werkstatt*. [From my workshop in Malonya.] Mitteil. Deutsch. Dendrol. Ges. 31: 214-224. 1924.—The author is convinced that evergreen gardens with a southern exposure, can be laid out in several gardens in central Europe. The temperature relations of Malonya are described. A number of trees and shrubs are mentioned which could be grown in such localities.—*J. C. Th. Uphof*.

7833. BARNES, A. C. *The future of the West African palm oil industry. Part I. Tropic. Life* 21: 18-19. 1925.—The author calls attention to the fact that the plantation system of palm oil production in Sumatra and Malaya is proving successful. He does not believe it is wise at this time, however, to do away with the present methods of forest production in Nigeria. Actual figures for the internal consumption of palm oil in Nigeria show about 100,000 tons per annum and at least 2,000,000 tons of palm fruit are harvested and worked. With improved methods the present production of palm oil obtained from the natural forests could be doubled. The better utilization of the natural forests should at least go hand in hand with the establishment of plantations.—*H. N. Vinall*.

7834. BOHRINGER, CH. *Einiges über Kautschuk*. [Caoutchouc.] Tropenpflanzer 23: 206-211. 1920.—The principal time for the harvest is in the summer. Trees are usually planted too close. Eighty to 85 trees per acre, or 25 × 25 feet distance is recommended. Eighty trees produce as much latex as 120 trees per acre. Conditions of marketing and of production are described.—*J. C. Th. Uphof*.

7835. BONIN, VON. *Alleen von Larchen, Larix*. [Avenues of Larix.] Mitteil. Deutsch. Dendrol. Ges. 29: 324-325. 1920.—*Larix* is suitable for planting along avenues, although rarely used for this purpose.—*J. C. Th. Uphof*.

7836. BORGES, CARL. **Growing fancy-leaved Caladiums in northern Florida.** Florida Fruits and Flowers 24: 94. 1925.—This is a brief account of the author's experience in growing fancy-leaved Caladiums in northern Florida.—*Arthur S. Rhoads.*

7837. DARROW, GEORGE M. **Blackberry varieties.** Amer. Fruit Grower 454: 5, 14; 454: 10, 17. *Illus.* 1925.—In the 1st of this series of 2 articles, after discussing the natural occurrence and hybridization of our native blackberries, the author discusses hybrids between blackberries and raspberries, the variety of colors exhibited by cultivated blackberries, how blackberries differ from raspberries, how blackberries differ from dewberries, and thornless blackberries and dewberries. In the 2nd article, he discusses European varieties, new English varieties, American varieties, new American varieties, and the selection of blackberry varieties to cover a long season.—*Arthur S. Rhoads.*

7838. FAIRBANKS, R. B. **The fig industry in Texas.** Amer. Fruit Grower 454: 8, 20. *Illus.* 1925.—This is a discussion of the development of the fig industry of south Texas with special reference to returns received by growers, setting, cultivating and fertilizing the trees, controlling leaf rust with Bordeaux mixture, harvesting the fruit, pruning methods, varieties grown, and preparing the figs for canning.—*Arthur S. Rhoads.*

7839. FISHER, H. T. **Bunch grapes in Florida.** Pamphlet. 28 p. *Illus.* Eustis, Florida, 1924; Florida Fruits and Flowers 22: 33-36; 23: 59-60; 24: 84-87. 1925.—This is a general discussion of bunch grape growing in Florida with special reference to soil and climatic conditions, early ripening, varieties, insects and diseases and the status of vineyard plantings in this state. An account is given also of the past attempts to grow grapes in Florida, particularly the viniferas.—*Arthur S. Rhoads.*

7840. FLOYD, BAYARD F. **Fertilizers and soil building.** Citrus Indust. 65: 5, 36. 1925.—After outlining the criteria of a well-balanced citrus fertilizer, the author discusses the need for building up the supply of organic matter in the sandy grove soils of Florida. To do this effectively, growers are advised not to rely upon the organic elements in the commercial fertilizers but rather upon the growing and turning under of cover crops. The benefits of an adequate supply of humus in grove soils are discussed in relation to the vigor of the trees and the quality of the fruit. If the volunteer cover crop is not sufficient, growers are advised to plant cow peas, velvet beans, beggar weed, or crotalaria.—*Arthur S. Rhoads.*

7841. GRAEBNER. **Ueber die in Deutschland winterharten Magnolien.** [Magnolia species hardy in Germany.] Mitteil. Deutsch. Dendrol. Ges. 29: 73-74. 2 pl. 1920.—The writer describes 15 species of *Magnolias* more or less hardy in Germany.—*J. C. Th. Uphof.*

7842. GRIFFITH, J. P. **The avocado in Porto Rico.** Porto Rico Insular Exp. Sta. Circ. 72. 3-41. 1923.—This paper presents a discussion of local conditions, varieties, propagation, culture, insects, and diseases. A bibliography of 25 titles is appended.—*Melville T. Cook.*

7843. GROSSENBACHER, J. G. **Mid-summer fertilization.** Citrus Indust. 65: 6. 1925.—The summer fertilizer application for Florida citrus groves is discussed with reference to the function and value of this application, materials from which the fertilizer should be derived, percentage composition, and amount to be applied.—*Arthur S. Rhoads.*

7844. GUNN, J. R. **Commercial coloring of bananas.** Florida Fruits and Flowers 25: 110. 1925.—The author gives a brief account, based on experiments conducted for 3 months during the winter of 1924-1925, of his experiences in the commercial coloring of Florida grown bananas.—*Arthur S. Rhoads.*

7845. HEDRICK, U. P. **Factors in successful plum culture.** Amer. Fruit Grower 455: 8, 16. *Illus.* 1925.—After reviewing the characteristics of the various groups of plums grown in the U. S. A., the author discusses soils, stocks, sterility, and culture, pointing out the limitations of the plum in these respects.—*Arthur S. Rhoads.*

7846. [HURLEBAUS] HARLEBAUS, E. H. **Summer fertilization.** Citrus Indust. 65: 7. 1925.—The summer application of fertilizer to Florida citrus groves is discussed with reference to the function and value of this application, materials from which the fertilizer should be derived, and percentage composition.—*Arthur S. Rhoads.*

7847. JACOB, A. **Die Kautschukkultur in Niederländisch Indien.** [Caoutchouc growing in Dutch India.] Tropenpflanzer 23: 231-244. 1920.—There are great differences between the working methods of the Dutch and those of the English. The careful Dutch plantation owner does not throw himself into booms; he must be sure that novelties are introduced only



when their productivity has been clearly demonstrated. The climatic conditions and rainfall are very favorable to rubber growing. Seed are planted in well prepared seed beds, at a distance of 30-40 cm. In Java and Sumatra *robusta* coffee is used as intercrop during the 1st few years. Between 2 rows of *Hevea* stands 1 row of coffee. The distance of planting for rubber trees was formerly 5 × 5 feet; at present it is 8 × 8 feet. No important diseases trouble this crop in the Dutch East Indies. The use of chemical fertilizers is in an experimental stage. Harvest and coagulation methods are mentioned. Coagulation is accomplished by the acetic acid method. The labor question is satisfactory, although locally some difficulties may arise. Some economic conditions as to contracts, taxes, cost of products, prices of labor, marketing and export trade are given.—*J. C. Th. Uphof.*

7848. JAMESON, JOY G. Relation of by-products industry to marketing of citrus. California Citrograph 10: 237-252. 1925.—Several lemon and orange by-product plants in California handle from 5 to 20% of the picked crops, depending upon market conditions. The elimination of this low grade fruit from the fresh fruit markets is believed to help maintain better prices for the balance of the crops.—*C. S. Pomeroy.*

7849. KACHE, PAUL. Die besten der neuen und selteneren Laubgehölze. [The best of the newer and rarer woody plants.] Mitteil. Deutsch. Dendrol. Ges. 28: 213-254. 1919.—A considerable number of new and rare trees are described. *Clematis Armandii* is a healthy evergreen and a high climber which blooms very early. It requires a warm situation. *C. nutans*, a half-shrubby climber, reaches a height of 3 m. and is rather hardy. *C. serratifolia* is a high climber; its flowers are yellowish and it is suitable for a rockery garden and for covering old walls. *Paeonia lutea* is a shrub with golden yellow flowers 6 to 8 cm. in diameter; it is recommended for breeding purposes. *Hymenanthera crassifolia*, from New Zealand, is a small, compact, evergreen shrub, especially valuable for its foliage; the small yellowish white flowers are less ornamental. This species is recommended for rockeries. *Tetracentron sinense* is not hardy in Germany. *Cocculus carolinus*, *C. Thunbergii* and *C. heterophyllus* are good ornamental climbers. *Berberis Geraldii* is very hardy; its fruit are 10 mm. long. *B. Gagnepainii*, *B. sanguinea*, *B. Hookerii*, *B. pruinosa*, and *B. verruculosa* are very good evergreens. The deciduous species of *Berberis* are not difficult to grow. *Stauntonia hexaphylla* is an evergreen climber but is not hardy in central Germany. *Decaisnea Fargesii* is a good ornamental shrub and grows well; it flowers a long time and the blossoms produce peculiar fruit. *Ilex Parneyi* and *I. wilsonii* grow best in a warm half shady place. A number of *Tilia*, *Cotoneaster* and *Rubus* species are described. *Gaultheria veitchiana* is a low, evergreen shrub, which grows best in a shady and warm situation. *Syringa giraldeana* flowers very early. When hybridized with varieties of *S. vulgaris* it may form a group of plants valuable for their early bloom.—*J. C. Th. Uphof.*

7850. KIENITZ, M. Können die Pappeln zur Verschönerung und Verbesserung der Wälder und Parkanlagen beitragen? [Are poplars able to contribute toward the beautifying and improvement of forests and parks?] Mitteil. Deutsch. Dendrol. Ges. 28: 279-284. 1919.—Poplars are not actual forest trees; they belong to areas with a steppe-like character. They cover banks of rivers in inundated areas and move to relatively high elevations along the river valleys. The characteristics and uses of some species are described.—*J. C. Th. Uphof.*

7851. KRANTZ, F. A. Some aspects of truck growing on peat lands in Minnesota. Jour. Amer. Peat Soc. 18: 36-44. 1925.

7852. LORD, E. L. Discussions on Florida horticulture. The citrus rootstock problem. Florida Fruits and Flowers 21: 5-6, 10; 22: 57-59, 69. 1925.—Since there is not sufficient data available at present on which to base final conclusions, the author attempts only to weigh the factors involved and to summarize present knowledge. After considering the advantages that may be gained by the use of rootstocks and discussing the effects of stocks, comparative stock tests, difference in point of view between nurseryman and grower, and rootstock variability, the relative values of the following rootstocks are reviewed in detail: sour orange (*Citrus aurantium*), sweet orange (*Citrus sinensis*), and the rough lemon (*Citrus limonium*).—*Arthur S. Rhoads.*

7853. MATTHEWS, C. D. Peach thinning and peach profits. Amer. Fruit Grower 45: 5, 19. Illus. 1925.—The thinning of peaches is discussed in relation to the profits obtained, based on investigations conducted by the North Carolina Exp. Sta. for 2 years with a number

of varieties of peaches. The points especially treated are the following: The effect of thinning on the tree and on the fruit, time and amount to thin, how to thin, and cost of thinning.—*Arthur S. Rhoads.*

7854. PIGHT, HEINRICH. *Die Rentabilität einiger Kameruner Kulturen.* [Productivity of some crops in Cameroon.] *Tropenpflanzer* 22: 317-325, 356-364, 1919; 23: 9-14, 46-50, 77-80. 1920.—A description is given of the management and especially the financial returns of a number of the principal crops grown in Cameroon, for example, oil palm, cacao, *Kickxia elastica*, *Hevea brasiliensis* and cola.—*J. C. Th. Uphof.*

7855. PREUSS, PAUL. *Ueber die Bewertung von Kokospalmen.* [Valuation of cocos palms.] *Tropenpflanzer* 23: 135-142. 1920.—Capital, production and valuation of cocos palm groves in New Guinea are discussed. The normal size of a plantation is 300 ha.; the number of laborers employed is 185. Groves are kept about 14 years. Palms are planted at a distance of  $10 \times 10$  m., sometimes at  $9 \times 10$  or  $9 \times 9$  m. Several tables are given showing the cost of production of groves over different years.—*J. C. Th. Uphof.*

7856. PREUSS, PAUL. *Ueber die Rentabilität von Ficus elastica.* [Financial returns of *Ficus elastica*.] *Tropenpflanzer* 23: 173-178. 1920.—*Hevea brasiliensis* has taken the place of *Ficus elastica*. In the Dutch East Indies and New Guinea are a number of older plantations of the latter species. Trees were planted at  $5 \times 5$  m., or about 400 per ha. The first harvest comes at the 5th year. During succeeding years the trees are repeatedly thinned until, at the 12th year, there are but 42 trees per ha. left. Trees are tapped once, sometimes twice a year. The 18th year is considered as producing a normal harvest. Various tables are given as to number of trees per ha., amount of harvest in trees of various ages, cost of upkeep and of production.—*J. C. Th. Uphof.*

7857. PURPUS, A. *Die holzigen Lianen und ihre Verwendung im Garten und Park.* [Woody climbers and their use in garden and park.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 147-170. 1922.—In this paper a large number of vines are described and their ornamental value is stated. The author divides the climbing plants according to H. Schenck into: (1) plants with tendrils; (2) plants climbing by winding stems; (3) plants climbing by roots and (4) those climbing by thorns.—*J. C. Th. Uphof.*

7858. RATCLIFFE. *Ueber Kokospalmenkultur.* [Cocoa-nut palm growing.] *Tropenpflanzer* 23: 103-113. 1920.—The cocoa-nut palm is the principal plant along the coast of the former German East Africa. Land must be properly cleared. The trees are planted at a distance of  $9 \times 9$ , often at  $10 \times 10$  m. Holes are dug to a depth of 50-60 cm., 3 to 4 weeks before planting. Seed selection is important. Sometimes only 25% germinate and often  $\frac{1}{2}$  of the seedlings have to be replanted, due to rotting, sunburn or termites. The seed-beds must be well shaded. Nuts are planted in the nursery 3-4 cm. apart; they germinate after 3-4 months. During the rainy season seedlings are planted; those which have little foliage but strong roots grow best. Planting is described. Young plants need much rain. Sometimes nuts are sown in the plantations; 4 are planted to a hill; and the surplus is removed later. During germination they are shaded with grass or the like. The first year the fields are kept clean. Peanuts, beans, castor oil plants and mohogo are grown as intercrops. Palms start bearing in 6-7 years; but not regularly until the 8th year. Harvesting of copra is described. Lists of products and costs of production from the 1st to the 12th year of a plantation are given.—*J. C. Th. Uphof.*

7859. ROE, A. W. *The Louisiana strawberry industry.* *Amer. Fruit Grower* 45<sup>5</sup>: 3, 16. *Illus.* 1925.—This is a general descriptive account of the Louisiana strawberry industry, including its history and present status, planting and cultivation, harvesting, field handling and marketing.—*Arthur S. Rhoads.*

7860. SCHOONOVER, W. R. *Spring irrigation of citrus orchards.* *California Citrograph* 10: 235, 256. 1925.—Proper soil moisture control for citrus trees may be summarized as follows: (1) Tree health and high production are promoted by a drying out of the soil between irrigations and especially so in the spring and early summer; (2) when water is applied it should be distributed so as to wet the entire root zone in so far as this is possible. The 1st statement has not been fully recognized by many citrus growers, but many test plots throughout the citrus sections of California have demonstrated that hundreds of acres of the older trees have suffered because the soil has been kept too uniformly moist. It never pays to put water on



soil that is already wet unless this must be done to reach a dry area, but it always pays to apply water to a dry soil.—*C. S. Pomeroy*.

7861. SCHWERIN, FRITZ VON. *Dendrologische Notizen*. [Dendrological notes.] *Mitteil. Deutsch. Dendrol. Ges.* 29: 251-254. 1920.—A number of species of climbing plants are mentioned as suitable for growing against stone dams across valleys.—Heavy above-ground roots of an old *Tilia* are mentioned.—Certain climbing plants under some conditions become non-climbers. *Tecoma radicans* when grafted on *Catalpa bignonioides* loses its climbing character. For this reason the author advises grafting *Wistaria* on *Robinia* or *Caragana*, *Caprifolium* on *Lonicera*, *Celastrus* on *Euonymus*, and *Hedera* on *Aralia*; further tests of *Tecoma* on *Catalpa* should be made.—*J. C. Th. Uphof*.

7862. SCHWERIN, FRITZ VON. *Die Alleen, ihre Erfindung und Verunstaltung*. [Avenues.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 150-155. 1919.—In ancient times avenues were not known. Types of soil, planting, manuring, pruning, and influence of bad pruning of trees along avenues are described. Telegraph and telephone wires cause considerable damage to trees.—*J. C. Th. Uphof*.

7863. SCHWERIN, FRITZ VON. *Die Kannappel-Eiche: Quercus sessiliflora (robur) Kannappellii Schwerin*. [The Kannappel oak.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 290. 1923.—Kannappel found in Marburg an oak producing light yellowish pink acorns which are sweet and have entirely lost their bitter flavor. This acorn is even sweeter than the chestnut; it resembles more the taste of a hazelnut. The bitter taste of acorns is associated with the brown color pigment. The new form has, no doubt, a great economic importance.—*J. C. Th. Uphof*.

7864. THAYER, PAUL. *Currant growing increasing in importance*. *Amer. Fruit Grower* 45: 10, 43. *Illus.* 1925.—After giving a brief historical account of the growing of currants, the author discusses the status of this industry in the U. S. A. and the leading varieties grown.—*Arthur S. Rhoads*.

7865. WALKER, SETH S. *Maturity of citrus fruits from a legal point of view*. *Citrus Indust.* 6: 10-11. 1925.—After discussing the need of legislation which will prohibit the shipment of immature citrus fruit, the author discusses the question of what constitutes maturity and the various standards by which maturity has been judged in the past. The color test originally advocated is said not to be a reliable index of the edibility or maturity of citrus fruit. The maximum acid standard subsequently tried was soon supplanted by a ratio of total solids to acid, but this also has proved unsatisfactory in the case of grapefruit. The author shows that a sliding scale of total solids and ratio has been found to fit the known facts much better than the flat ratio of 7:1 now in use for grapefruit. He concludes that the standards used for judging citrus fruits are of necessity based on the edibility of the fruit rather than on any exact measure of "maturity," since just what constitutes maturity is not known.—*Arthur S. Rhoads*.

## MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

E. W. SINNOTT, *Editor*

(See also in this issue Entries 7630, 7691, 7693, 7772, 7800, 7923, 7958, 7970, 8015, 8041)

7866. CHIARUGI, A. *L'origine dello stolofillo dalla foglia cotiledonare e l'evoluzione del sistema vascolare per accelerazione basifuga in "Tulipa silvestris" L.* [The origin of the "stolophyll" from the cotyledon and the evolution of the vascular system through basifugal acceleration in *Tulipa silvestris* L.] *Nuovo Gior. Bot. Italiano* N.S. 31: 177-192. *Pl.* 4. 1924.—The author continues his investigations on the "droppers" of *T. silvestris* (Bot. Absts. 13, Entry 5907), proposing the new term "stolophyll" for these organs which regulate the level of growth of some plants. He finds that the stolophyll is made up of the enlarged sheath and leaf base of the cotyledon.—By sectioning seedlings of *Tulipa* the author reaches the conclusion that the difference in the structure of the vascular bundles of the stem and the root is due to the "basifugal acceleration" of Chauveaud, who maintains that the vascular system evolves during the growth of the seedling with the suppression and absorption of the old, alternate, conducting elements belonging to a primitive phase, and the appearance of

collateral elements belonging to a more advanced phase. The author believes that at the beginning of the ontogenetic development, throughout the entire length of the little plant, the vascular system develops according to the alternate system; following this, while the evolution in the root is stationary and the structure remains primitive, in the upper parts of the plant the alternate phase is suppressed and the successive phases are evolved. While the differentiation of the cells for the more evolved phase takes place, at the same time, the less evolved phases are suppressed and finally reabsorbed. The alternate disposition of the elements in the root and the collateral disposition in the stem are different not because they belong to 2 different parts of the plant but because they represent different stages in the evolution of the vascular system. The basifugal acceleration is not uniform in *Tulipa*, but is very rapid in the leaf bases and slow in higher parts of the little plant.—*Author and P. D. Caldis.*

7867. DOHNA. Durchtreibenede Zapfen der *Larix leptolepis*. [Continuous growth on cones of *Larix leptolepis*.] Mitteil. Deutsch. Dendrol. Ges. 32: 220. 1922.—Cones of young plants of *Larix leptolepis* proliferated at the top. It is supposed that the cause is due to the wet summer.—*J. C. Th. Uphof.*

7868. GATES, R. RUGGLES. Pollen tetrad wall formation in *Lathraea*. Cellule (Vol. Jubilaire V. Grégoire, 1<sup>re</sup> partie) 35: 49-59. 1 pl., 3 fig. 1925.—In this paper the process of wall formation in the pollen tetrad in *Lathraea clandestina* is described. The heavy, special wall which appears inside the pollen mother-cell wall is considered to be a secretion from the cytoplasm of the cell and to be quite independent of the original mother-cell wall although laid down in contact with it. Wedge-shaped (tetrahedral) thickenings of this special wall appear at 4 equidistant points and passively displace and push inwards the cytoplasm. At this stage spindles may or may not persist between the 4 tetrad nuclei. Evanescent cell plates occur on the spindles in some forms before wall formation, and this has probably led to the view that they form the tetrad walls. From the tips of the solid angle, thickenings of special wall furrows grow in. They are narrow, with parallel walls in the uncontracted cell, and from the plasma membrane forming the walls of the furrows is secreted a cell wall which is a continuation of the tetrahedral thickenings and is composed of the same material. This wall advances as the furrow advances. When first deposited in the furrow it is so delicate that it can only be demonstrated by special cell-wall stains. Its presence when the furrow is being formed has been overlooked in most previous papers. After the furrows meet in the center of the cell, the walls deposited in them become much thicker and finally separate widely the 4 cells of a tetrad. The original mother-cell wall, which in *Lathraea* never separates from its neighbours, then breaks down, and this is followed by the dissolution of the material separating the pollen grains, each of which has now formed its own wall inside.—*From author's summary.*

7869. GOVERTS, WILHELM. Stelzenbäume. [Trees with brace roots.] Mitteil. Deutsch. Dendrol. Ges. 29: 318-320. 1920.—The occurrence of brace roots on some plants when growing in swampy areas is described, as on *Alnus glutinosa*, *Salix cinerea*, *Quercus pedunculata*, and *Rhamnus frangula*. On sandy soil such roots have been found on *Picea excelsa* and on *Pinus silvestris*.—*J. C. Th. Uphof.*

7870. KRAUSE, K. Ueber einen hapaxanthen Baum. [A hapaxanthous tree.] Mitteil. Deutsch. Dendrol. Ges. 31: 204-206. 1 pl. 1921.—*Schareyia excelsa*, a rutaceous plant which dies after the flowering period, is described. Some other cases of hapaxanthous plants are described.—*J. C. Th. Uphof.*

7871. KÜSTER, ERNST. Ueber *Fagus silvatica* var. *asplenifolia*. Mitteil. Deutsch. Dendrol. Ges. 31: 137-140. 1 fig. 1921.—The variability of the leaf of *Fagus silvatica* var. *asplenifolia* is described. Leaves often occur which are like those of the normal *Fagus silvatica*. It rarely happens, however, that only  $\frac{1}{2}$  of the leaf is normal.—*J. C. Th. Uphof.*

7872. LAUBERT, R. Ungewöhnliche Erscheinungen an Rosskastanien. [Unusual occurrences in *Aesculus*.] Mitteil. Deutsch. Dendrol. Ges. 31: 143-146. 2 fig. 1921.—(1) Some leaves of *Aesculus* are lacinate, due to spring frosts at a period when the young leaves have not been entirely developed. (2) In the Königin Louise Strasse in Dahlem, which is planted with *Aesculus rubicunda*, twigs which are turned toward the street lights lose their leaves in the fall 2-3 weeks later than those of the other twigs. (3) Leaves were found which were pinnately instead of palmately compound.—*J. C. Th. Uphof.*



7873. LECOMTE, HENRI. Additions au sujet de *Pinus Krempfii* H. Lec. [Additional remarks on *Pinus Krempfii*.] Bull. Mus. Hist. Nat. [Paris] 30: 321-325. 10 fig. 1924.—Further material of the Nhatrang Pine, *Pinus Krempfii* H. Lec., from Annam, Indo China, makes possible a more accurate and detailed description of some of its critical characters, such as bud scales, bracts, leaves, etc., which are illustrated in the text. Three collections made by Krempf in the region of Nhatrang are referred to this species; a 4th, by Poilane, is distinguishable as *P. Krempfii* var *Poilanei* H. Lec., because of its longer and wider leaves which contain 6 instead of 8 secretory canals.—*John M. Fogg, Jr.*

7874. MAECKLENBURG, A. Durchtrieb eines *Abies concolor*-Zapfens. [Continuance of growth of a cone of *Abies concolor*.] Mitteil. Deutsch. Dendrol. Ges. 32: 219-220. 1922.—On the apex of a cone of a tree of *Abies concolor* 1.5 m. high a number of green needles were produced. An actual shoot was not present.—*J. C. Th. Uphof.*

7875. MÜNCHHAUSEN, BÖRRIES VON. Wiederausschlagen erfrorener *Sequoia gigantea*. [Growing of frozen *Sequoia gigantea*.] Mitteil. Deutsch. Dendrol. Ges. 31: 295-296. Fig. 294-295. 1921.—A tree of *Sequoia gigantea* 90 cm. high developed on its root a spherical tuber having a diameter of 13 cm.—*J. C. Th. Uphof.*

7876. PAPE, H. Kätzchensucht der Hazelnuss. [Catkin production in *Corylus*.] Mitteil. Deutsch. Dendrol. Ges. 32: 235. 1 fig. 1922.—A plant of *Corylus Anellana* produced in the fall toward the top of a twig 76 catkins. The cause is not known.—*J. C. Th. Uphof.*

7877. REX, VICTOR. Wurzelknollen an einer Fichte. [Root tubers in *Picea*.] Mitteil. Deutsch. Dendrol. Ges. 31: 294-295. 1 fig. 1921.—A 6-year-old *Picea* tree, which was transplanted when 4 years old, produced a tuberous growth on the root, which was probably caused by a development of callus.—*J. C. Th. Uphof.*

7878. ROBINSON, WILFRED. Proliferation and doubling in the flowers of *Cardamine pratensis* L. Mem. and Proc. Manchester Literary and Phil. Soc. 69<sup>3</sup>: (1-10). 1924-1925.—There is some confusion in the literature regarding deviations from the normal in the flowers of *Cardamine pratensis*, and microscopical details of such deviations have not hitherto been described.—Specimens of *C. pratensis* showing 2 main types of abnormality were found in meadows near Chaedle Hulme, Cheshire. One of the specimens was similar to the double-flowered form arising by proliferation of the ovary described most frequently by previous observers. The other, a less completely double-flowered specimen, showed features which suggested possible differences in the origin of the 2 types of abnormality. Microscopic investigation showed that, in both types, proliferation took place by the meristematic activity of a growing point at the base of the ovary of a flower which was otherwise normal in the number and arrangement of its parts. In the one case the ovary itself was carried up on a stalk produced by the growth activity of tissues immediately below the base of the ovary but outside this; in the other specimen all the growth took place within the ovary from its base, and the meristematic growing point was carried up to about the middle of the pod-like structure.—From the 2nd specimen normal mature seed were obtained and plants are being grown from these to determine whether the specimen originated as a hybrid by the natural crossing of the completely double-flowered form with a normal single form.—By vegetative multiplication from the original specimens, it has been possible to cultivate plants showing variations, both in the character and degree of the doubling.—*From Author's summary.*

7879. RONDE, W. F. DE. *Pinus rigida*, unverletzt am Stamme ausschlagend. [Leaf growth on the stem of an uninjured tree of *Pinus rigida*.] Mitteil. Deutsch. Dendrol. Ges. 29: 326. 1 pl. 1920.—In an individual of *Pinus rigida* dense bunches of needles, such as are usually produced only when the trees have been damaged, developed directly on the stem.—*J. C. Th. Uphof.*

7880. SCHÄFER, ALBERT. *Picea alba*-Verbänderung. [Fasciation in *Picea alba*.] Mitteil. Deutsch. Dendrol. Ges. 29: 52-56. 2 fig. 1920.—Different kinds of fasciations are described in this species.—*J. C. Th. Uphof.*

7881. SCHENCK, H. Verbänderter Larchenwipfel. [Fasciation in *Larix*.] Mitteil. Deutsch. Dendrol. Ges. 31: 117-118. 1 pl. 1921.

7882. SCHWERIN, FRITZ VON. Dendrologische Notizen. [Dendrological notes.] Mitteil. Deutsch. Dendrol. Ges. 31: 173-188. 8 pl. 1921.—Among various short dendrological notes

are mentioned a peculiar 1-sided top of Douglas spruce.—A vertical growth of branches on several plants of *Abies arizonica* is described. *Populus lasiocarpa* is one of the best introduced species of cotton wood, being cold resistant and making considerable growth yearly. An instance of non-symmetrical fruits occurred in *Acer saccharinum*. A columnar growth due to insect damage is described. Heavy, broad, clump-like stems are noted in the Newland-oak in England, and in the very old *Platanus orientalis* near Bojuk-dereh, on the Bosphorus.—*J. C. Th. Uphof*.

7883. STOUT, A. B. Studies of *Lythrum Salicaria*-II. A new form of flower in this species. Bull. Torrey Bot. Club 52: 81-85. Fig. 1-6. 1925.—*Lythrum Salicaria* L. has flowers of 3 types: long-styled, with a set of long-stamens and a set of short-stamens; mid-styled, with a set of long-stamens and one of short-stamens; and short-styled, with a set of mid-stamens and one of long-stamens. In a culture of this species at the New York Botanical Garden, a new form appeared with the pistil and set of long-stamens almost equal, but this length is about midway between the 2 lengths characteristic of the mid- and long-lengths as seen in long- and mid-styled plants. The genetic changes involved in the development of the new form have yet to be determined.—*P. A. Munz*.

7884. TEUSCHER, H. Luftwurzeln an einer Birke. [Air roots on a birch.] Mitteil. Deutsch. Dendrol. Ges. 32: 237. 1 fig. 1922.—Roots were developed from a wound on the stem of a birch. Such a phenomenon seems hitherto to have been unknown in this genus.—*J. C. Th. Uphof*.

7885. WEATHERWAX, PAUL. Anomalies in maize and its relatives.—II. Many-flowered spikelets in maize. Bull. Torrey Bot. Club 52: 87-92. Fig. 1-4. 1924.—A variation was observed in the floral structures of maize in which the "rachilla of the spikelet is often much more complex, the number of flowers in a spikelet is more than two, and the order of development of the flowers is reversed. . . . The transformation of a two-rowed structure into a many-rowed structure here suggests the possibility of the same occurrence, phylogenetically, in the development of the polystichous axes in the tassel and the pistillate inflorescence from the distichous ancestral form."—*P. A. Munz*.

7886. ZIMMERMANN, WALTHER. Eigenartige Blütenverhältnisse bei *Alnus* und Beobachtungen an *Betula*, *Corylus* und *Carpinus*. [Peculiar flower conditions in *Alnus*, and observations on *Betula*, *Corylus* and *Carpinus*.] Mitteil. Deutsch. Dendrol. Ges. 32: 112-134. 2 fig. 1922.—Several individual flowers are described, showing peculiar teratological characteristics as to the formation and location of bracts, perianth, stamen and pistil in *Alnus*, *Betula*, *Corylus* and *Carpinus*. Some flowers showed the tendency to become hermaphroditic.—*J. C. Th. Uphof*.

## MORPHOLOGY AND TAXONOMY OF ALGAE

WM. RANDOLPH TAYLOR, *Editor\**

(See also in this issue Entries 7616, 7625, 7636, 7656, 7657, 7658, 7660, 7665, 7669, 7674, 7678, 8035, 8044, 8070, 8095)

7887. ANONYMOUS. Yeasts, fats and alcohol from seaweed. Nature 115: 63. 1925.—This paper refers to a communication from Nadson of the Principal Botanical Garden, Leningrad, reporting the successful culture of *Laminaria saccharina* on various media.—*O. A. Stevens*.

7888. AMOSSE, A. Diatomées de la côte orientale d'Afrique. [Diatoms from the eastern coast of Africa.] Bull. Mus. Hist. Nat. [Paris] 30: 329-335. 1924.—The author records the occurrence of 61 species and varieties of diatoms in Zanzibar, Aden and Daressalam. *Cerataulus labuensis* Cl. var. *linearis* n. var. and *Eupodiscus parvulus* n. sp., are described.—*John M. Fogg, Jr.*

7889. BIGELOW, N. K. Further studies of the plankton of Lake Nipigon. Univ. Toronto Studies Biol. Ser. 24: 71-80. 1923 [1924] (Publ. Ontario Fish. Res. Lab. 20).—A qualitative

\*Due to temporary absence of the Editor, responsibility for the section this month rests with the Associate Editor-in-Chief.



study of the plankton of Lake Nipigon was initiated in the summer of 1921. The results of this work have been published in study No. 13 of this series. The present paper deals with the results obtained in the continuation of this investigation during the summer of 1922. It records plankton taken from widely separated regions in the open water of the lake, in the protected bays, in small streams flowing into the lake, in small ponds and lakes in the immediate vicinity of the lake but having no direct connection with it and from the stomachs of small fish, principally young suckers. The work is thus partly ecological. There are listed 26 species of Algae, 12 species of Protozoa, 2 species of Rotatoria and 30 species of Arthropoda. Most of these forms are additions to the lists of the previous year, but for some difference in abundance and distribution has been noted. The general conclusion from this year's work confirms the conclusion of the previous year, that the water of the region, although poor in plankton, is relatively rich in diatomaceous life.—*Author*.

7890. [DANILOV, A. N.] Данилов, А. Н. О новых формах *Symploca muscorum* (Ag.) Gom. [Notes on new forms of *Symploca muscorum* (Ag.) Gom.] Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 169 [177]–173[181]. 1923.—Following the Russian text Latin characterizations are given of the following new forms, Danilov being authority: *Symploca muscorum* (Ag.) Gom. f. *typica* n. f., f. *coerulea* n. f., and f. *recta* n. f.—*Frederick V. Rand*.

7891. [ELENKIN, A. A.] Еленкин, А. А. Несколько слов по поводу рода *Anabaenopsis* (Woloszynska) Miller из синезеленых водорослей. [Notes on the genus *Anabaenopsis*.] Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 73–78. 1923.—Following the notes in Russian, a Latin key is given to the species of *Anabaenopsis*.—*Frederick V. Rand*.

7892. [ELENKIN, A. A.] Еленкин, А. А. Schema *Chroococcacearum* classificationis. Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 65–69. 1923.—For the data presented in this Latin outline of the classification of the *Chroococcaceae* see Bot. Absts. 14, Entries 3576, 3577.—*Frederick V. Rand*.

7893. [ELENKIN, A. A.] Еленкин, А. А. О двух видах рода *Microcystis* Kütz. [Two species of the genus *Microcystis* Kütz.] Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Reipubl. Rossicae] 3: 12–15. Following the Russian text a Latin diagnosis is given of *Microcystis aeruginosa* (Kuetz.) Elenk. emend.—*Frederick V. Rand*.

7894. [ELENKIN, A. A., AND M. M. GOLLERBAKH.] Еленкин, А. А., и М. М. Голлербах. О *Coelosphaerium Naegelianum* Unger и других видах этого рода в связи с родом *Gomphosphaeria* Kuetz. [Notes on *Coelosphaerium Naegelianum* Unger and several other species of this genus, and on *Gomphosphaeria* Kuetz.] (Latin summary.) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 145–155. 1923.—The authors, in studying one of the internal structures of the mucous cavity of *Gomphosphaeria Naegelianum*, found it to be composed of fibrils radially arranged. The exterior of the cavity showed the same structure, the fibrils here being continuous with those of the interior as shown by stained sections. This fibrillar structure is, however, inconstant, the inner and outer walls sometimes appearing homogeneous, and therefore is of no generic value. *G. lacustris*, *G. rosea* and *Coelosphaerium Kützianum* show similar phenomena.—*Florence Hedges*.

7895. [ELENKIN, A. A., AND M. M. GOLLERBAKH.] Еленкин, А. А., и М. М. Голлербах. О двух дробянках, эндофитирующих в слизи *Coelosphaerium Naegelianum* Ung. [Notes on two *Schizophyceae* endobiotic within the cells of *Coelosphaerium Naegelianum*.] (Latin summary) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 158–160. 1923.—Two new, almost colorless species of blue-green algae (*Cyanophyceae*) were found growing abundantly within cavities of *Coelosphaerium Naegelianum*, and named by the authors *Lyngbya endophytica* n. sp. and *Synechococcus endobioticus* n. sp.—*Florence Hedges*.

7896. [ELENKIN, A. A., AND N. V. STARK.] Еленкин, А. А., AND Н. В. Старк. О ложно-синезеленой водоросли *Asterocystis ramosa* (Thwait.) Gobi и других видах этого рода. [Notes on *Asterocystis ramosa* and other species of the genus.] (Latin summary.) Ботанические Материалы Института Спорных Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 117-128. 1923.—*Asterocystis ramosa* (Thwait.) Gobi, *A. Wolleana* (Hansg.) Lagerh. and related forms are compared and discussed, and a Latin diagnosis is given of *A. ramosa* (Thwait.) Gobi (sensu latiore Elenk. & Stark).—Frederick V. Rand.

7897. [GOLLERBAKH, M. M.] Голлербах, М. М. О новом виде синезеленой водоросли из рода. *Tolypothrix* Kuetz. и новой секции этого рода. [Notes on a new species of *Tolypothrix* Kuetz. of the new section *Diplocoleopsis*.] Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р.С.Ф.С.Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 173 [181]-176 [184]. 1923.—Following the Russian text, diagnosis and observations in Latin are given of *Tolypothrix* (sect. *Diplocoleopsis* n. sect.) *Elenkinii* n. sp., Gollerbakh being the authority.—Frederick V. Rand.

7898. HOWE, MARSHALL A. Notes on algae of Bermuda and the Bahamas. Bull. Torrey Bot. Club 51: 351-359. Fig. 1-14. 1924.—*Pithophora heterospora* Howe & Hervey from Bermuda, *Protoderma* (2) *polyrhizum* Howe from Caicos Islands, *Chondrocystis Bracei* Howe from the Bahamas and *Dichothrix Bornetiana* Howe from the Bahamas are described as new species. *Porphyridium cruentum* (Ag.) Näg., *Lyngbya lutea* (Ag.) Gomont, and *Chrootheca Richteriana* Hansg. are given as additions to the Bahama flora.—P. A. Munz.

7899. KYLIN, HARALD. Algologiska notiser från bohusländska kusten. [Algologic notes from the coast of Bohuslän, (province of western Sweden).] (Swedish) Bot. Notiser 1922: 343-348. Fig. 1. 1922.—The observations were made in the neighborhood of Kristineberg's Zoölogical Station. The following species were noted: *Chlorochytrium dermatocolax*, *Ectocarpus tomentosoides*, *Isthmoplea sphaerophora*, *Lithosiphon filiformis*, *Acrothrix gracilis*, *Sporochnus pedunculatus*, *Cutleria multifida*, *Erythrotrichia carnea*, *Porphyra leucosticta*, *Chantransia Thuretii*, *Phyllophora membranifolia*, *Callophyllis laciniata*, *Cystoclonium purpurascens*, *Euthora cristata*, *Rhodophyllis bifida*, *Plocamium coccineum*, *Delesseria sanguinea*, *D. alata*, *D. sinuosa*, *Odonthalia dentata*, *Heterosiphonia coccinea*, *Trilithella intricata*, *Callithamnion Hookeri*, *C. Brodiaei*, *C. scopulorum*, *Plumaria elegans*, *Ptilota plumosa*, *Furcellaria fastigiata* and *Polyides rotundus*. Of these, *Callithamnion scopulorum* is new to Sweden. Thirteen literature references are appended.—P. A. Rydberg.

7900. LEMOINE, MME. PAUL. Corallinacées recueillies par dragages en Méditerranée (Croisière du Pourquoi-Pas, en 1923.) [Corallines collected by dredgings in the Mediterranean (Cruise of the "Pourquoi-Pas" in 1923).] Bull. Mus. Hist. Nat. [Paris] 30: 402-405. 1924.—This report gives the results of a series of dredgings made from the "Pourquoi-Pas" at 7 stations in the Mediterranean Sea, namely: Balearic Islands, Bouches-du-Rhone, Hyères, Corsica, Tunis, Algeria and Sicily. The genera collected were *Lithothamnium*, *Lithophyllum*, *Pseudolithophyllum*, and *Corallina*. Twelve species in all were found, at depths varying from 40 to 100 m. Many of these records are not new, but more accurate information was gained of the maximum depth at which some species are able to exist.—John M. Fogg, Jr.

7901. LINDEMANN, E. Vom Plankton warmer Meere. [The plankton of warm seas.] Naturwissenschaften 12: 888-895. Fig. 1-10. 1924.—The writer confines himself to a study of the variation in form and in number of species of the plankton as influenced primarily by temperature. He first points out the areas of warm seas, from observations made by various deep sea expeditions. The Indian ocean has an average temperature of 28°, the Guinea stream 27°, while in the Gulf of Naples where the special studies reported were made, the temperature range was 25°-27° in summer, 15°-19° in April and 10°-14° in winter. The first question put by the writer was which plankton forms live in these warm seas and how do they vary from the other cold sea forms and is there any dependence of form on outer factors. Aside from certain cosmopolitan species found in all seas, warm or cold, sharp distinctions were found between warm and cold water species; certain species common to both cold and warm seas were very well adapted to a study of the question as to the temperature effect on the form of the organism.—Lindemann points out that among the factors which may be responsible for the different forms of the warm seas species over the same species in cold water,



the temperature factor as influencing the buoyancy of water is perhaps of greatest importance, this buoyancy decreasing with increasing temperature of the water. Thus, the warm water forms would need to develop decreased resistance to sinking to save themselves from extinction in the lower depths (below 80–100 m.). One therefore finds in the warm sea plankton a pronounced development of flotation mechanisms such as hairs, bristles, flanges, spines, parachute-like forms, etc., as well as gas bubbles, oil drops, etc. Illustrations are given of the variation in the development of the flotation mechanism of certain Peridineans and Diatoms, showing very clearly how much more effectively the warm water forms have developed the flotation mechanisms. To further illustrate this point, relative lengths are given of the spines of *Ceratium* under different temperature conditions. The extreme richness of the plankton of the Indian Ocean, both in numbers and variety as contrasted with the cooler seas, is also noted.—Orton L. Clark.

7902. MACKEY, ALEXANDER HOWARD. *Diatoms of Nova Scotia*. Proc. & Trans. Nova Scotian Inst. Sci. 15: 175–187. 1921–1922 [1923].—This is a list, with localities of species, etc., as determined by Tempère and Peragallo of Paris and included in the 2nd edition of "Diatomées du Monde Entier," published from 1907 to 1915 in 30 "Fascicules" of 16 p. each, descriptive of 1000 microscopic slides of diatomaceous deposits from all parts of the world. The material was collected by A. H. MacKay, but this paper is a summary of the determinations made in Paris, only from the lacustrine deposits collected and transmitted. The 27 genera and 255 species and varieties are listed, with localities and numbers referring to the set of microscope slides.—Author.

7903. OYE, PAUL VAN. *Note sur les organismes de l'eau saumâtre du vieux port de Batavia (Java)*. [Organisms of the brackish water of the old port of Batavia.] Ann. Biol. Lacustre 10: 207–216. 1921.—The salinity of the water was 21.00–29.38 per 1000. The plankton was not rich in species but contained representatives of the Peridinieae, Bacillarieae, Cyanophyceae, Flagellatae, and 1 species of *Chlamydomonas*, as well as *Beggiatoa* sp. The genus *Ceratium* was noticeable for its absence.—N. Carter.

7904. SAVAUGEAU, C. *Sur quelques exemples d'hétéroblastie dans le développement des Algues phéosporées*. [Certain cases of heteroblasty in the development of pheosporic algae.] Compt. Rend. Acad. Sci. Paris. 179: 1576–1579. 1924.—Heteroblasty is the production of plants of diverse forms from similar spores. It was previously reported (Compt. Rend. Acad. Sci. Paris 179: 1381, 1924) for the zoospores of *Castagnea Zosterae*. This paper describes the development of *Castagnea irregularis* and *C. cylindrica*, which were cultivated for the purpose. A similar heteroblasty is also found and described for *Ascoecyclus orbicularis*.—C. H. Farr.

7905. SCHMID, G. *Über Organization und Schleimbildung bei Oscillatoria jenensis und das Bewegungsverhalten künstlicher Teilstücke*. [The organization and mucus production of *Oscillatoria jenensis* and the motility of artificial fragments.] Jahrb. Wiss. Bot. 60: 372–627. 1921.—The filament is segmented and the length of the segments bears a definite relation to the length of the hormogonia. The longitudinal membrane of *Oscillatoria* has pores which may be considered outlets for the mucus, which is produced by all parts of the filament. The mucus is a carbohydrate and is bi-refractive. Fechner's theory of motion and Phillip's hypothesis of ciliary action were not substantiated. Observation of artificial fragments supports the theory that all parts of the filament are motile.—S. F. Cook.

7906. [ШКОРБАТОВ, Л. А.] Шкорбатов, Л. А. *Новые виды и разновидности из гр синезеленых водорослей, найденные в Харьковской губ.* [Synopsis of new species and varieties of Muxorhysae in the Charkoviensi Province (Ukrania).] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 87–89. 1923.—Latin descriptions of the following are given, Shkorbatov being the authority: *Oscillatoria tenuis* Ag. var. *nigra* n. var., *O. limosa* Ag. var. *disperso-granulata* n. var., *O. nitida* n. sp., *Lyngbya cryptovaginata* n. sp., *Cylindrospermum fluviaticum* n. sp., *Anabaena Scheremetievi* Elenk. var. *incurvata* Elenk. f. *ovalispora* n. f., *A. spiroides* Kleb. var. *Ukrainica* n. var., *A. Hassallii* (Kütz.) Witt. f. *brevispora* n. f., and *Merismopedia insignis* n. sp.—Frederick V. Rand.

7907. STRØM, K. MÜNSTER. *Freshwater algae from Caucasus and Turkestan*. Nyt Mag. Naturvidensk. [Kristiania] 57: 129–142. Pl. 2. 1920.—This is an account of algal col-

lections made by N. Wille in 1897; 71 species were found, but the flora was poor, as is natural in relatively dry, limestone districts. The following new varieties are described: *Cosmarium granatum* var. *depressum* n. var., *C. impressulum* var. *punctatum* n. var., and *C. subtumidum* var. *minor* n. var.—*Author*.

7908. STRÖM, K. MÜNSTER. Freshwater algæ from Tuddal in Telemark. *Nyt. Mag. Naturvidensk.* [Kristiania] 57: 143–195. Pl. 3–5, fig. 1–2. 1920.—A description of the district investigated is followed by an account of the plankton in the lakes, as well as a description of the different algal associations. In the systematic part 300 species are mentioned, with systematic notes under each. The following new species and varieties are described: *Euastrum tuddalense*, *Cosmarium tuddalense*, and *Closterium ulna* var. *constrictum*.—Finally, the results of the investigations are summarized, and the geographical affinities given as essentially western.—*Author*.

7909. TAHARA, MASATO. Zur Kenntnis der Keimentwicklung bei Sargassum. [Embryology of Sargassum.] *Sci. Rept. Tohoku Imp. Univ.*, Ser. 4, 1: 91–95. Fig. 1. 1924.—On the coast of Misaki several species of *Sargassum* grow very luxuriantly, but only one, *S. enerve* Ag., is concerned in the present investigation. Since division figures are not shown well in material collected in the daytime, fixation was carried out every hour during the night, using chromacetic acid. Sections 15–25 $\mu$  thick were stained either with Heidenhain's hematoxylin or with safranin-lichtgrün. The latter proved best as it left the chromatophores unstained.—As already known, the oogonium of *Sargassum* has 8 nuclei in the earlier stages. In the author's studies of embryo-development in this species he usually found the oogonium with 2 intact and 6 degenerated nuclei, but never with a single nucleus. In the early stages numerous chromatophores accumulate around the 8 egg nuclei, after which a clearer halo arises in the immediate vicinity of each nucleus, but entirely independent of the chromatophores. Six of the 8 nuclei now begin to degenerate, but their expulsion, as in the Fucaceae, does not occur. The nucleoles of these degenerated nuclei persist in the cytoplasm for a long time. The 2 intact nuclei now move toward opposite poles of the embryo where for a period they remain free in the common protoplasmic mass. At the lower pole future development of the rhizoids takes place; here the plasma is noticeably denser and stains very deeply. The 2 nuclei increase in size and a radiating structure develops around them in the cytoplasm, but limited to the polar side and more distinct in the vicinity of the upper nucleus. These nuclei frequently possess 2–3 nucleoles, which might point to a previous fusion of the egg and sperm nuclei; but even in the 8-nucleate state some of the nuclei have 2–3 nucleoles.—Just before the 1st nuclear division of the embryo a cross-wall is laid down approximately in the equatorial zone. During the prophase fine fibrils penetrate into the nucleus and the radiating asters disappear. In the telophase 2 diminutive nuclei are formed and around them asters appear in preparation for the 2nd division. The further development of the embryo has already been published (*Jour. Coll. Sci. Imp. Univ. Tokyo* 32, 1913).—It appears to the author that, as in *Sargassum enerve*, 2 egg nuclei are probably concerned in the embryo development of other species of *Sargassum* and of related genera, such as *Cystophyllum* and *Cystoseira*. Comparison is made with the general phenomenon of twinning.—*Frederick V. Rand*.

7910. [ТРОИТСКАЯ, О. В.] Троицкая, О. В. О связи между родами *Coelosphaerium* Näg. и *Gomphosphaeria* Kütz. из Chroococcaceae. [Affinities of *Coelosphaerium* Näg. and *Gomphosphaeria* Kütz.] (Latin summary.) Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [*Notulae Systematicae* Inst. Crypt Hort. Bot. Petropolitan] 2: 69–73. 1923.—Among the normal *Coelosphaerium Kützingiana* Naeg. observed in the vicinity of Petrograd, certain specimens were occasionally found with irregular pedicels attached at the center as in the genus *Gomphosphaeria* Kütz., but differing in no other respect from type. These specimens differed from *Gomphosphaeria lacustre* Chod. in having round rather than ellipsoid cells and also in their dimensions (2–4 $\mu$  diam.); they are without doubt abnormal for *Coelosphaerium Kützingiana*. A somewhat similar case occurs in *C. rosea* Snow which in its spherical cells and pedicels is intermediate between *Coelosphaerium* and *Gomphosphaeria*; it is placed by Snow in the former genus and by Lemmermann in the latter. The author believes that the criteria now used in differentiating the 2 genera are insufficient.—*Frederick V. Rand*.

7911. ТРОИТСКАЯ, О. В. [Троицкая, О. В.] О Новой хламидомонаде: *Chlamy-*



*domonas sphaerica* Troitsk. nov. sp. Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 81-82. 1923.—Following the Russian text a Latin description is given of *Chlamydomonas sphaerica* n. sp.—*Frederick V. Rand.*

7912. [VORONIKHIN, N. N.] Воронихин, Н. Н. Новые Виды Водорослей С Кавказа, I. [New algae from the Caucasus. I.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 87-100. 1923.—Latin descriptions of the following are given, Voronikhin being the authority: *Phormidium molle* (Ktz.) Gom. var. *tenuis* n. var., *P. gelatinosum* n. sp., *P. valderianum*. (Delp.) Gom. var. *tenius* n. var., *P. pulvinatum* n. sp., *Schizothrix (Symplocastrum) tenuis* n. sp., *S. lateritia* Ktz. var. *Hansgirgii* n. var., *Hydrocoleus turfusus* n. sp., *Anabaena variabilis* Kütz. f. *crassa* n. f., *A. solitaria* Kleb. var. *tenuis* n. var., *A. flos-aquae* (Lyngb.) Breb. var. *intermedia* n. var., *A. flos-aquae* f. *spiroides* n. f., *A. spiroides* Kleb. var. *talyschensis* n. var., *Cylindrospermum punctatum* n. sp., and *C. caucasicum* n. sp.—*Frederick V. Rand.*

7913. [VORONIKHIN, N. N.] Воронихин, Н. Н. Новые Виды Водорослей С Кавказа, II. [New algae from the Caucasus. II.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulea Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 113-116. 1923.—Latin diagnoses of the following algae are given, Voronikhin being the authority: *Aulosira striata* n. sp., *Plectonema diplosiphon* n. sp., *Fischerella caucasica* n. sp., *Homoeothrix crustacea* n. sp., *Calothrix aeruginosa* n. sp., *Rivulariopsis floccosa* n. sp., *Dichothrix compacta* (Ag.) Born. & Flah. var. *calcarata* n. var., *D. subdichotoma* n. sp., and *Hammatoidea simplex* n. sp.—*Frederick V. Rand.*

7914. [VORONIKHIN, N. N.] Воронихин, Н. Н. Новые Виды Водорослей С Кавказа. III. [New algae from the Caucasus. III.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 140-142. 1923.—Latin descriptions are given of the following, Voronikhin being the authority: *Lepocinclis texta* (Duj.) Lemm. var. *minor* n. var., *Phacus longicauda* (Ehrb.) Duj. var. *ovalis* n. var., *Trachelomonas mirabilis* Swir. var. *minor* n. var., *Peridinium cinctum* Ehrh. var. *minor* n. var., *Gongrosira circinnata* (Borzi) Schmidle var. *minor* n. var., *Oedogonium trioicum* n. sp., *Bulbochaete Brebissonii* Ktz. var. *minor* n. var., *B. Nordstedtii* Wittr. var. *minor* n. var., and *Vaucheria borealis* Hirn. var. *minor* n. var.—*Frederick V. Rand.*

7915. [VORONIKHIN, N. N.] Воронихин, Н. Н. Новые Виды Водорослей с Кавказа. IV. [New algae from the Caucasus. IV.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 192. 1923.—Latin descriptions are given of *Debarya talyschensis* n. sp., and *Mougeotia aspera* n. sp., Voronikhin being the authority.—*Frederick V. Rand.*

7916. [VORONIKHIN, N. N.] Воронихин, Н. Н. (Эпифильные Водоросли Закавказья.) [The epiphyllous algae of Transcaucasia.] (French summary.) Известия Главного Ботанического Сада Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. Républ. Russe] 22: 70-76. 1 fig. 1923.—The author reports the finding of 5 species of epiphyllous algae in Transcaucasia: *Phykopeltis epiphyton* Mill., on leaves of *Abies Nordmanniana* and *Buxus sempervirens* L.; *Trentepohlia abietina* (Flot.) Hansg. on leaves of *Abies Nordmanniana*; *Pleurococcus vulgaris* Meneg. on leaves of *Abies Nordmanniana* and *Picea orientalis*; *Scytonema intermedia* de Willd., on leaves of *Abies Nordmanniana*; and *Nostoc* sp. juv., on leaves of *Abies Nordmanniana*.—Fritsch, in his phytogeographical outlines of the algal flora of the tropics (Ann. Bot. 21, 1907), calls attention to the luxuriant development of the aerial algal formation and especially of the epiphyllous algae. This author's discovery thus supports a new tropical "nuance" for the physiognomy of the Transcaucasian vegetation.—*Frederick V. Rand.*

7917. YERMOLOFF, NICOLAS. Notes on Chaetoceras and allied genera, living and fossil. (Abstract.) Proc. Linn. Soc. London 135: 10. 1923.

7918. ZIMMERMANN, W. Zur Entwicklungsgeschichte und Zytologie von Volvox. [The life history and cytology of Volvox.] Jahrb. Wiss. Bot. 60: 256-294. 1921.—*Volvox aureus* and *V. globator* were investigated. In the development from the gonidia to the daughter colony the nucleus remains in the anterior part of the cell and the chromatophore in the

posterior. These parts reverse their places in the mature hollow sphere, in which the anterior end of the cell is directed toward the interior of the sphere. The attachment of the flagellae is the same as that characteristic of all the Volvocales—a basal plate connected by a strand with the nucleus. The production of pyrenoids is by new formation rather than by division. The haploid number of chromosomes is 12 and the reduction division is the 1st which takes place in the germinating zygote.—*S. F. Cook.*

## MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

(See also in this issue Entries 7616, 7625, 7697, 7701, 8098)

7919. AMANN, J. Contribution à la bryologie du Maroc. [Contribution to the bryology of Morocco.] Rev. Bryologique 51: 57-58. 1924.—The present report is based on a small collection of mosses made by P. Jaccard in Morocco during the spring of 1923. The species enumerated number 29, all but 6 of which are acrocarpous. *Archidium knitratum* and *Ceratodon cedricola* are proposed as new.—*A. W. Evans.*

7920. [BALANDIN, F. V.] Баландин, Ф. В. О находке тундровой Формы *Drepanocladus exannulatus* (Gümb.) Warnst. в Ленинградской Губернии. [*Drepanocladus exannulatus* forma "tundrae" found in the province of Leningrad.] (Russian with a German résumé.) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Reipubl. Rossicae] 3: 53-56. 1924.—The author reports the discovery of *Drepanocladus exannulatus* var. *pinnatus* f. *tundrae* (Moenkem.) Baland. in the province of Leningrad, Russia, where it was collected in 1923 by J. J. Getmanov. The distinctions between this form and var. *brachydictus* f. *tundrae* (Arn.) Moenkem. are pointed out.—*A. W. Evans.*

7921. [БЕЛЯЕВА, А. И.] Беляева, А. И. К гератологии некоторых видов *Polytrichum* Dill. [Abnormalities in *Polytrichum*.] (Russian with a German résumé.) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Reipubl. Rossicae] 3: 49-53. 1924.—The author reports a series of twin sporophytes in certain species of *Polytrichum*, based on observations made in the province of Minsk, Russia, during the summer of 1923. In addition to the various types of this abnormality already recorded in the literature he describes an individual of *P. commune* in which the 2 sporophytes have a single vaginule but 2 calyptras and also a specimen of *P. gracile* in which the seta of 1 sporophyte is twisted about the other, both capsules being enclosed within a single calyptra.—*A. W. Evans.*

7922. GAUME, R. Contribution à l'étude de la flore bryologique de la Brie. [Contribution to the study of the moss flora of the Brie.] Rev. Bryologique 51: 49-57. 1924.—The author gives a report on the mosses of the Brie, a district east of Paris. After describing the general features of the area and reviewing the bryological work already accomplished, he enumerates (from his own collections) 8 species of *Sphagnum* and 59 true mosses. Under each species full data regarding stations are included.—*A. W. Evans.*

7923. GREGUSS, P. A paraphylliumok fejlődéstörténeti jelentősége. [The phylogenetic significance of paraphyllia.] Bot. Közlemények 21: 70-73, (15)-(16). Fig. 1-10. 1923 [1924].—According to the author the hairs borne on the capsule stalk of the moss, *Eriopus setigerus* Mitt., a member of the Hookeriaceae, represent paraphyllia. He feels justified in homologizing these paraphyllia of the 2 x-generation with the leaves of the Lycopodiales.—*I. Györfy (translated).*

7924. GUTTMANN, FRITZ. Sero-diagnostische Untersuchungen über die Verwandtschaftsverhältnisse innerhalb der Archegoniatae. [Sero-diagnoses of Archegoniates.] Mez, Bot. Archiv 6: 421-457. Fig. 1. 1924.—From serum diagnoses the author develops a phylogenetic tree, the main trunk of which leads from *Coleochaete*, through *Riccia*, *Anthoceros*, *Selaginella* and the Pinaceae, to the Angiospermae. At about the level of *Riccia* a branch leads to *Marchantia* and *Radula* and a 2nd branch to *Sphagnum* and the Musci. Somewhat higher up another branch passes directly to *Equisetum* and a much more complex branch leads through



*Marattia*, *Osmunda*, *Aspidium*, *Struthiopteris* and *Pilularia*, to *Azolla* and *Marsilia*. This branch gives off 2 secondary branches, one leading to *Botrychium* and the other to the Cycadofilices and *Cycas*, giving off a tertiary branch to *Ginkgo*. Just before the level of *Selaginella* is reached, the main trunk gives off 2 short branches, one leading directly to *Lycopodium* and the other to *Isoetes*.—*William Seifriz*.

7925. LORBEER, G. Der Chromatophor, die Chromosomenzahl und die Dehizenslinie des Sporogons von *Anthoceros laevis* L. [The chromatoplasts, the chromosome number, and the line of dehiscence of the capsule of *Anthoceros laevis*.] Ber. Deutsch. Bot. Ges. 42: 231-237. Fig. 1-4. 1924.—Previous investigators have maintained that the sporophytic cells of *Anthoceros* each contain 2 chromatoplasts, 1 contributed by each parent. The author believes that there is a single 2-lobed chloroplast in each cell. According to his studies the chromosome numbers are 8 and 16, instead of 4 and 8 as previously reported. He finds further that the 2 lines of dehiscence in the capsule-wall are bounded on each side by a row of narrow epidermal cells. The radial walls between these rows remain thin, in contrast to the other radial walls, and it is in these thin walls that the dehiscence takes place.—*Karl Sax*.

7926. [SAVICH, LIDIĀ.] Савич, Лидия. *Sphagnum Lindbergii* Schpr. в Новгородской губернии. [*Sphagnum Lindbergii* found in the province of Novgorod.] (Russian with a German résumé.) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Reipubl. Rossicae] 3: 79-80. 1924.—The author announces the discovery of *Sphagnum Lindbergii* var. *macrophyllum* Warnst. in the province of Novgorod, northern Russia, regarding it as a relict of the Ice Age. The moss was found by W. W. Alabyschew near the Volkhof River.—*A. W. Evans*.

7927. [SAVICH, LIDIĀ.] Савич, Лидия. О гибридном происхождении *Tetraplodon paradoxus* (R. Br.) Hag. [The hybrid origin of *Tetraplodon paradoxus*.] (Russian with a German résumé.) Ботанические Материалы Института Спорных Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Reipubl. Rossicae] 3: 63-78. 1924.—The author shows that *Tetraplodon paradoxus* (R. Br.) Hag., a cleistocarpous moss found in Siberia, Nova Zembla, Spitzbergen and arctic America, is probably a hybrid between *T. bryoides* (Zoeg.) Lindb. (♀) and *Voitia hyperborea* Grev. & Arn. (♂). In support of this conclusion she points out that *T. paradoxus* often grows in company with its supposed parents, that neither it nor the *Voitia* is known from Scandinavia, and that it shares certain characters with the *Voitia* and certain others with *T. bryoides*. She shows, further, that the Scandinavian *T. pallidus* Hag., which has sometimes been confused with *T. paradoxus*, is distinct and renames it *T. bryoides* var. *pallidus* (Hag.) Savich.—*A. W. Evans*.

## MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA, AND MYXOMYCETES

H. M. FITZPATRICK, *Editor*

J. E. FLYNN, *Assistant Editor*

(See also in this issue Entries 7616, 7625, 7641, 7642, 7706, 7821, 7887, 7895, 7962, 7967, 7969, 7970, 7971, 7972, 7975, 7980, 8005, 8013, 8019, 8066, 8076, 8088, 8089, 8101, 8138)

### FUNGI

7928. ANONYMOUS. Bund zur Förderung der Pilzkunde, Berlin. [Association for the Advancement of Mycology, Berlin.] Zeitschr. Pilzkunde 1: 4-5. 1922.

7929. ANONYMOUS. Zweck und Ziele der Deutschen Gesellschaft für Pilzkunde. [Scope and aims of the German Society of Mycology.] Zeitschr. Pilzkunde 1: 1-3. 1922.

7930. BOURNE, B. A. Morphological similarity between the Pythium-like fungus found associated with diseased sugar cane roots in Hawaii and Porto Rico. Jour. Dept. Agric. Porto Rico 8: 61-70. 1925.—This paper was read before the Association of Sugar Technologists of

Porto Rico, June 1924. The author gives a review of the subject and makes a comparison between the organism which he finds in Porto Rico and the one which Carpenter found in Hawaii. He feels that the organisms are so similar as to come within the range of ordinary variations within species.—*Melville T. Cook.*

7931. CIFERRI, R. Sul polimorfismo di un *Fusarium* della zucca. [Polymorphism of a *Fusarium* from pumpkin.] *Ann. Bot.* 16: 217–223. 1924.—*Fusarium oxysporum* Schlecht var. *obtusiusculum* n. var. is described as a wound parasite of *Cucurbita pepo* L., in Italy. Sporodochia, chlamydospores, sclerotia and free conidiophores were observed.—*P. D. Caldis.*

7932. COOL, CATH. Bijdrage tot de mycologische flora van Nederland. [Contribution to the mycological flora of the Netherlands.] *Nederland. Kruidk. Arch.* 1923: 307–314. 1924.—Localities are given for rare Basidiomycetes found in the Netherlands.—*J. C. Th. Uphof.*

7933. [KARAKULIN, B. P.] Каракулин, В. П. К вопросу о систематическом положении грибов типа *Exobasidiopsis mihi*. [Notes on fungi of the type *Exobasidiopsis* Karak. Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 101–108. 1923.—In addition to the Russian text, Latin descriptions are given of *Pachybasidiella* Bub. & Syd. (Mucedineae), and *P. polyspora* Bub. & Syd. Then follow brief characterizations of *Kabatiella* Bub. emend. Karak., *K. microsticta* Bub., *K. polyspora* (Bub. & Syd.) Karak. n. comb. (= *Pachybasidiella polyspora* Bub. & Syd.), *K. ribis* Wassil. n. sp., *K. nigricans* (Atk. & Edgert.) Karak. n. comb. (= *Protocoronospora nigricans* Atk. & Edgert. = *Exobasidiopsis viciae* Karak.), and *K. caulivora* (Kirch.) Karak. n. comb. (= *Gloeosporium caulivorum* Kirch.).—*Frederick V. Rand.*

7934. [LEBEDEVA, L. A.] Лебедева, Л. А. Микофенологические наблюдения в парке и оранжереях Гл. Ботанического Сада. II–XX. [Mycophenological observation in the park and greenhouses of the Petrograd Botanical Garden.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 1: 70–77, 124–126, 135–143, 147–156. 1922; 2: 90–96, 142–144. 1923.—These instalments are in continuation of the author's morphological, physiological and phenological studies of the fungi found at the Botanical Garden of Petrograd (see Bot. Absts. 12, Entry 1965). In II–V (p. 70–77) some 44 species of 40 genera are briefly considered; in VI (p. 124–126), 16 species of 12 genera; in VII (p. 135–143), 50 species of 39 genera; in X–XIV (p. 147–156), 71 species of 56 genera; in XV–XIX (p. 90–96), 104 species of 68 genera; and in XIX (?)–XX (p. 142–144), 26 species of 22 genera.—*Frederick V. Rand.*

7935. LEBEDEVA, L. A. Fungi novi in Horto Botanico Petropolitano annis 1921–22 collecti, V. Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 108–109. 1923.—Latin diagnoses of the following fungi are given, Lebedeva being the authority: *Septoria meliae* n. sp., *Colletotrichum orchidearum* Allesch. f. *lycaste* n. f., and *Hendersonia minor* n. sp.—*Frederick V. Rand.*

7936. [LEBEDEVA, L. A.] Лебедева, Л. А. О связи между Грибками. *Sirodiplospora spiraeae* Lebed. и *Scleroderris spiraeicola* (Henn.) Lebed. [Affinities between the fungi *Sirodiplospora spiraeae* and *Scleroderris spiraeicola*.] (Latin summary.) Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 129–139. 1923.—The author observes that *Sirodiplospora spiraeae* Lebed. is the conidial stage of *Scleroderris spiraeicola* (Henn.) Lebed. which does not differ from *Cenangella spiraeicola* Henn., as is shown by the author's investigations of specimens of Hennings. Furthermore, *Sirodiplospora Sambucina* Naum. and *Scleroderris Sambucina* Naum. appear to be identical with the preceding.—*Sirodiplospora spiraeae* Lebed. is widely distributed on branches of *Sorbaria* and *Spiraea* in Pavlovsk, Dietskoje (Tsarshoje), Selo, Dacznoje, Peterhof and Sablino.—*Florence Hedges.*

7937. PATOULLARD, N. Basidiomycètes nouveaux de Madagascar. *Bull. Mus. Hist. Nat. [Paris]* 30: 406–413. 1924.—The following species are described as new: *Hyalospora Waterloti*, *Calocera discipes*, *Ceracea elongata*, *Pterula Decaryi*, *Physalacria Decaryi*, *Aleurodiscus salmonaeus*, *Polyporus (Ovini) reticeps*, *P. (Imbricati) croceo-leucus*, *Leptoporus Decaryi*, *Daedalea ioecephala*, *Xanthochrous Waterloti*, *X. bryophilus*, *Hydnum hololeucum*, *Boletus albipes*, *B. graveolens*, *B. acris*, *B. Decaryi*, *B. Liliputianus*, *B. Maromandiae*, *B. holothejus*, *Cantharellus avellaneus*, *C. Madagascariensis*, and *Lentinus caesariatus*.—*John M. Fogg, Jr.*



7938. [SHEMBEL, C. IŮ.] Шембель, С. Ю. Новые виды несовершенных грибов, найденные в Астраханской губернии. [Synopsis of new Fungi Imperfecti in the Astrachan Province, Central Russia.] Ботанические Материалы института споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 110-112. 1923.—In addition to the Russian text, Latin diagnoses are given for the following fungi, Shembel being the authority: *Phoma camphorosomatis* n. sp., *P. dodartiae* n. sp., *P. zygophylli* n. sp., and *Leptostroma plantaginis* n. sp.—Frederick V. Rand.

7939. SYDOW, H. Fungi from the Province of Sorsogon. Leaflets Philippine Bot. 9: 3113-3138. 1925.—The following new species are described: *Meliola acrotricha*, *M. alocasiae*, *M. amadelpa*, *M. ardisiae*, *M. bruguiera*, *M. calocheta*, *M. commixta*, *M. irosinensis*, *M. odontocephala*, *M. pumila*, *M. uncinata*; *Mycosphaerella cassiae*, *M. leucospila*; *Leptosphaeria panici*; *Melanops peregrina*; *Trabutia irosinensis*, *T. neurophila*, *T. pacifica*; *Catacumma egenulum*, *C. strychni*; *Schizochora stenosperma*; *Camarotella triphasiae*; *Ophiodothella trichocarpa*; *Ellisiodothis elmeri*; *Diathrypton consimile*; *Parasterina irosinensis*; *Prilleuxina pumila*; *Echidnodes denigrata*; *Peltosoma* n. gen., *P. freycenetiae*; *Gloeosporidium elmeri*; *Colletotrichum elmeri*; *Naplomela* n. gen., *H. cellidis*; and *Heterosporium elmeri*.—E. D. Merrill.

7940. [TRANSHEL, V.] Траншель, В. Опыты и наблюдения по биологии ржавчинных грибов за 1914-1919 гг. [Experiments and observations on the biology of the Uredineae. 1914-1919.] (Latin summary.) Ботанические Материалы Института Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 83-86. 1923.—Observations and experiments on the biology of the following species are discussed: *Puccinia iridis* (DC.) Wallr., *P. Lasiagrostis* Transh. n. sp., *P. Stipae-sibericae* Ito subsp., *P. Umbelliferarum-Stipae-sibiricae* Transh., *P. Stenocoelii-Stipae-sibiricae* Transh. n. sp. n. f., *Urocystis Veratri* (DC.) Schroet., *P. Crucianellae* Desm., *P. Oerteliana* Transh. n. sp., *P. Serratulae-Caricis* Kleb., *P. Opizii* Bubak., *P. simplex* (Körn.) Eriks. & Henn., *P. nitidula* Transh., *P. Isiacae* (Thüm.) Wint., *P. permixta* Syd., and *P. Helianthi* Schwein.—Hosts upon which these fungi were found are given, together with the plants successfully inoculated in the laboratory.—Frederick V. Rand.

## LICHENS

7941. [POLJANSKII, VLADIMIR.] Полянский, Владимир. О видах рода *Xanthoria* (Fr.) Stitzenb. из окрестн Павловской Экскурсионной Станции. [Notes on *Xanthoria* species collected in Pavlovsk.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 176 [184]-189. Map. 1923.—The author observed intermediate forms between the typical *Xanthoria candelaria* (Ach.) Arn. and its var. *substellaria* Ach. in Pavlovsk, where these lichens were abundantly distributed. A variegated form of the var. *substellaris*—*X. candelaria* (Ach.) Arn. var. *substellaris* Ach. f. *Bergii* Polianskii n. f., was widely distributed. A discussion of nomenclature is given.—Florence Hedges.

7942. [TOMIN, M. P.] Томин, М. П. О нахождении новой Формы лишайника *Rinodina nimbosa* (El. Fr.) Th. Fr. в степях Европейской России. [Notes on a new form of *Rinodina nimbosa*.] Ботанические Материалы Института Споровых Растений Главного Ботанического Сада Р. С. Ф. С. Р. [Notulae Systematicae Inst. Crypt. Hort. Bot. Petropolitani] 2: 78-80. 1923.—Following notes in Russian, a Latin description is given of *Rinodina nimbosa* (El. Fr.) Th. Fr. f. *sareptana* n. f.—Frederick V. Rand.

## BACTERIA

7943. LIESKE, RUDOLF. Bakterien und Strahlenpilze. [In: LINSBAUER, K. (Editor) Handbuch der Pflanzen-Anatomie. Thalphyten. Bd. 6, Abt. 2, Teil 1.] 2 + 88p. 65 fig. Gebrüder Borntraeger: Berlin, 1922.—This is a general discussion of bacteria, including the so-called thread bacteria or actinomyces, covering in brief form the historical development of microbiology, the taxonomic relationships of bacteria with emphasis upon Migula's system, and a more detailed treatment of the literature upon the morphology, arrangement, size, cell

membrane, capsules and slime production, cytoplasm, vacuoles, flagella, cell nucleus, reserve materials within the cells, including carbohydrates, fats, and proteins, pigments, cell division, endospores, arthrospores and gonidia, filterable viruses, sexual reproduction and the symplastic state, plemorphism and variability. Special treatment is included upon the so called iron bacteria, the sulphur bacteria, the purple bacteria, and the mycobacteria. A fair list of references prior to 1921 is given and there are 65 text figures in black and white.—*Ivan C. Hall.*

7944. [NADSON, G. A., AND A. A. BACHINSKAÏA.] Надсон, Г. А., AND А. А. Бачинская. **Микроб дубового слизетечения, *Streptococcus mesenterioides* var. *Lagerheimii* (*Leuconostoc Lagerheimii* Ludw.).** [*Streptococcus mesenterioides* var. *Lagerheimii*, the microorganism of oak gummosis.] (German summary.) *Болезни Растений* [*Morbi Plantarum*] 12: 60-68. *Fig. 1-9.* 1923.—This microorganism was first discovered in Russia by A. Jacoby (1883) and described under the name *Leuconostoc quercus*. It was later found by G. Lagerheim and named by Ludwig L. *Lagerheimii*. In 1910 the authors obtained it in pure culture and compared it with the frog-spawn fungus of sugar refineries. In the present contribution they set forth its structural, cultural and physiological characteristics and conclude therefrom that *L. quercus*, or *L. Lagerheimii*, represents only a variety of the so-called frog-spawn fungus, *Leuconostoc*, better known as *Streptococcus mesenterioides*. They propose the name, *S. mesenterioides* Van. Tieg. var. *Lagerheimii* n. var. Contrary to the view of Beijerinck, it appears to have nothing in common with *Bacterium xylinum*, but approaches certain lactic acid and slime-forming bacteria of *S. lacticus* type, and belongs to the physiological group of the lactic acid bacteria.—*Frederick V. Rand.*

#### MYXOMYCETES

7945. BROEKSMIT, T. **De Myxomyceten in 1922 en 1923.** [*The Myxomycetes in 1922 and 1923.*] *Nederland. Kruidk. Arch.* 1923: 315-327. 1924.—A number of Myxomycetes have been observed by the writer, 6 of which are new to the Netherlands, namely, *Badhamia foliicola* Lister, *Physarum psittacinum* Ditm., *Stemonitis flavogenita* Jahn., *Lachnobolus congestus* Lister, *Margarita metallica* Lister, and *Physarum viride* Pers. var. *aurantium* Lister. A complete list of all species known to occur in the Netherlands is appended.—*J. C. Th. Uphof.*

### PALEOBOTANY AND EVOLUTIONARY HISTORY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 7626, 7670, 7722, 7822, 7924, 8015)

7946. BERRY, EDWARD W. **A banana in the Tertiary of South America.** (Abstract.) *Science* 61: 522. 1925.

7947. BERRY, EDWARD W. **A Pleistocene Flora from the Island of Trinidad.** *Proc. U. S. Nation. Mus.* 66: 1-9. *Pl. 1-4.* 1925.—This paper describes the following species representing a Pleistocene mangrove association from the southwestern part of the Island of Trinidad: *Palm rays*, *Pithecolobium unguis cati*, *Clusia fossilia*, *Persea americana*, *Conocarpus erectus*, *Rhizophora mangle*, *Mimusops preduplicata*, *Avicennia nitida*, and *Phyllites oropouchensis*. The last represents either the Guttiferae or the Sapotaceae. The *Clusia* and the *Mimusops* are described as new.—*Author.*

7948. KNOWLTON, F. H. **The possible origin of the Angiosperms.** [Rev. of: THOMAS, H. H. *The Caytoniales, a new group of angiospermous plants from the Jurassic rocks of Yorkshire.* *Phil. Trans. Roy. Soc. London B* 213: 299-363. *Pl. 11-15.* 1925 (see Bot. Absts. 14, Entry 5567).] *Science* 61: 568-570. 1925.

7949. OSBORN, HENRY FAIRFIELD. **The origin of species as revealed by vertebrate paleontology: A rejoinder to William Bateson.** (Abstract.) *Science* 61: 523-524. 1925.

7950. SPEGAZZINI, CARLOS. **Coniferales Fósiles Patagónicas.** [*Patagonian Fossil Coniferales.*] *An. Soc. Cien. Argentina* 98: 125-141. *Fig. 6.* 1924.—The author gives a preliminary description of 2 species of silicified cones from the upper Santa Cruz River region of Patagonia. The 1st is an *Araucaria* which he calls *Araucarites mirabilis* n. sp., and which is considered to be of Rhaetic age; the 2nd he considers to represent a new genus of *Pinales* which



he calls *Romeriotes argentinensis*, and which comes from strata somewhere between the upper Jurassic and the Cenomanian stage of the Upper Cretaceous, in age.—*E. W. Berry*.

## PATHOLOGY

FREDERICK V. RAND, *Editor*

LILLIAN C. CASH AND HARRY BRAUN, *Associate Editors*

(See also in this issue Entries 7582, 7585, 7589, 7590, 7598, 7599, 7600, 7602, 7606, 7652, 7682, 7683, 7684, 7688, 7690, 7694, 7695, 7716, 7729, 7733, 7734, 7735, 7738, 7742, 7748, 7757, 7758, 7768, 7777, 7792, 7793, 7794, 7795, 7796, 7806, 7810, 7815, 7816, 7838, 7842, 7858, 7872, 7875, 7879, 7880, 7882, 7886, 7895, 7931, 7944, 8066, 8072, 8104)

## DISEASES CAUSED BY FUNGI

7951. BARGER, W. R., AND LON A. HAWKINS. Borax as a disinfectant for citrus fruit. Jour. Agric. Res. 30: 189-192. 1925.—Preliminary report of investigations of the use of disinfectants for washing California citrus fruit to control decay. Boric acid and technical borax in solution in the wash water materially reduced blue mold (*Penicillium italicum* Wehmer) decay of oranges. No appreciable retarding of *Alternaria* sp. or *Pythiacystis* sp. was found. The data presented concerns fruit injured by clipping away a piece of rind or by puncturing, soaked in 2.5% borax solution at various temperatures and for different lengths of time, dried and then inoculated by rubbing blue and green mold spores on the injury. The fruit was inspected during a holding period of 7 weeks under optimum conditions for decay. Soaking the fruit in a solution at 73°F. for 4 minutes reduced blue mold decay 80% and as the time of soaking and the temperature were increased the control was correspondingly more effective. Rinsing the fruit with water after treatment greatly reduced the protection against mold. Green mold (*Penicillium digitatum* Sacc.) appeared more difficult to control by the borax solution but some retardation was obtained by soaking the fruit for 6 minutes in a solution at 120°F.—*Wm. R. Barger*.

7952. BELL, A. F. Iliu disease of sugar cane. Australian Sugar Jour. 16: 838. 1925.—Although present for several years, the Iliu disease was first authentically discovered in Australia during September, 1924, in the Isis District. The variety most susceptible to this disease is M.1900 seedling. Every precaution should be taken to prevent its spread. Before any cane plants are sent out from the Isis District they should be carefully dipped in Bordeaux mixture and, as the disease is due to a soil-dwelling fungus, farm implements should be thoroughly cleaned before shifting them to other districts.—*Nellie E. Fealy*.

7953. BIRMINGHAM, W. A. "Downy Mildew" of rhubarb. *Peronospora jaapiana*, Magn. Agric. Gaz. New South Wales 36: 288-290. 3 fig. 1925.—This disease has been found at 2 points in New South Wales. It is suggested that prevention will probably be brought about by thorough spraying with Bordeaux mixture.—*L. R. Waldron*.

7954. BROOKS, F. T. *Polyporus adustus* (Willd.) Fr. as a wound parasite of apple trees. Trans. British Mycol. Soc. 10: 225-226. 1925.—This is a preliminary report on a disease of apple trees caused by *Polyporus adustus*.—*W. B. McDougall*.

7955. BRYAN, MARY K. *Verticillium* wilt of tomato. Phytopathology 15: 187-188. 1925.—A wilt of tomato plants, due to a fungus resembling *Verticillium albo-atrum* was found to be abundant in northern Ohio and in Erie County, Pennsylvania. This disease often occurred in the same field with the *Fusarium* wilt from which it could be distinguished by cultural means only.—*B. B. Higgins*.

7956. BURKHOLDER, C. L. Raspberry anthracnose preventatives. Amer. Fruit Grower 45: 16. 4 fig. 1925.—The control of raspberry anthracnose is discussed with special reference to Indiana conditions. It is pointed out that in southern Indiana the raspberry tips often throw up new shoots that may become infected before the plants are taken up and transplanted to the new patch. Under such climatic conditions the value of planting in the fall, or of taking the plants up in the fall, removing the old portion of the cane, and healing in until the ground is ready for planting in the spring, is emphasized as an important means of control.

Variation in the results of spraying in the different states are attributed to varying climatic conditions. While summer spraying to protect the young shoots when they are 6-8 inches high has given control in addition to that from the delayed dormant spray, and no injurious effect to the plants in Wisconsin, summer sprays of either lime-sulphur (1 to 40) or Bordeaux mixture are considered a questionable remedy as far south as Indiana because they have resulted in many cases of injury to the foliage and fruit spurs of the fruiting canes, although not to the young shoots themselves. The delayed dormant spray alone, if thoroughly applied, is said to hold the disease in check and keep it from having a serious effect on either the length of life or the total seasonal crop, provided spraying is started not later than the spring of the 2nd growing season.—*Arthur S. Rhoads.*

7957. COOK, MELVILLE T. Sugar-cane leaf spots in Porto Rico. Jour. Dept. Agric. 8<sup>2</sup>: 55-57. 1924.—This paper read before the Association of Sugar Technologists of Porto Rico, June, 1924, discusses 2 types of leaf spot diseases due to *Helminthosporium sacchari*.—*Author.*

7958. COSTANTIN, J. Étude anatomique de la souche souterraine de l'*Eryngium alpinum* L. [Anatomical study of the root-stock of *Eryngium alpinum*.] Bull. Mus. Hist. Nat. [Paris] 29: 537-540. 1923.—In specimens of *Eryngium alpinum* attacked by fungal growth the subterranean portions alone are invaded by the hyphae, those parts above ground remaining intact. The fungus concerned is a species of *Pleurotes*. The author finds it difficult to determine whether the case under study is one of parasitism or of symbiosis. A detailed account is given of the manner in which the various tissues are affected by the fungus.—*John M. Fogg, Jr.*

7959. COTTRELL-DORMER, W. Notes on the epidemic of red rot in M. 1900 seedling in the West Plane Creek District—Spring, 1924. Queensland Agric. Jour. 23: 73-75. 3 fig. 1925.—The occurrence of *Colletotrichum falcatum* in connection with red rot in sugar cane is described and illustrated.—*W. D. Francis.*

7960. DURRELL, L. W. A preliminary study of fungous action as the cause of down corn. Phytopathology 15: 146-154. Fig. 1-4. 1925.—Field observations over a number of years have demonstrated that "down corn," maize [*Zea mays*] broken by high wind, is most frequently broken at the 4th node or above and that a very large percentage of the broken nodes show evidence of fungous infection. Laboratory examination showed the presence of *Diplodia zeae*, *Gibberella saubinetii*, *Basisporium gallarum*, or *Fusarium* sp. By using a special mechanism designed for the purpose, the actual breaking strength was determined for the various nodes, both healthy and diseased. The average breaking strength of the first 5 nodes of healthy plants was 163, 133, 104, 84, and 64 pounds, respectively. For infected nodes the values were 55, 72, 54, 47, and 33, respectively—an average decrease in breaking strength of nearly 50%. Histological study of the nodes showed that the tissues of the lower nodes were heavily lignified and that the amount of lignification decreased progressively in the higher nodes. In infected nodes the non-lignified cells, and the lignified cells to some extent, were destroyed, thus greatly reducing the elasticity and strength of the stalk. Such reduction was sufficient to bring the breaking strength of the 4th and 5th nodes below that necessary to withstand heavy winds.—*B. B. Higgins.*

7961. FARIS, JAMES A., AND GEORGE M. REED. Modes of infection of sorghum by loose kernel smut. Mycologia 17: 51-67. Pl. 5-7. 1925.—*Sphacelotheca cruenta* ordinarily produces systemic infection which results from the penetration of seedlings by germ tubes. In some cases in the field, however, what appeared to be local infections were found. Inoculation experiments were then carried out on healthy plants, after the removal of the terminal heads, in which smut spores were injected into the boot, growing point, or between the leaf sheath and internode. From 33 such inoculations, 25 infected heads were obtained. In some cases the infection was purely local, as when the inoculation was into the boot of a plant about to head out. In other cases there occurred a type of shoot infection.—*G. R. Bisby.*

7962. FOEX, E. Une pourriture Verticillienne du tubercule de pomme de terre. [A tuber rot of Irish potatoes due to a *Verticillium*.] Ann. Épiphyties 9: 121-133. Fig. 1-12. 1923.—A *Verticillium* is described as causing dry rot of potato tubers; its morphological characters are identical with those of *V. albo-atrum* but the cultural and pathogenic characters are different. Inoculations into potato tubers readily caused a rot to appear.—*J. Dufrenoy.*

7963. GODFREY, GEORGE H. Experiments on the control of brown-patch with chlorophenol



**mercury.** Boyce Thompson Inst. Plant Res. Prof. Paper 1. 1-5. *Fig. 1-2.* 1925.—This paper reports tests with various chemicals in an attempt to control brown-patch of *Poa annua*, due to a fungus which has not yet been positively identified. Plots treated with chlorophenol mercury showed not only a complete checking of fungous growth, but also entire recovery of the grass as manifested by a vivid green color. Prepared Bordeaux mixture perhaps checked the growth of the fungus to some extent.—*Lillian C. Cash.*

7964. GRAVATT, G. F. **The chestnut blight in North Carolina.** North Carolina Geol. and Econ. Surv. Forestry Div. Economic Papers 56. 13-17. *Pl. 3-5, fig. 1.* 1925.—The history, symptoms, rate of spread and losses from the chestnut blight are briefly treated.—*Lillian C. Cash.*

7965. GUBA, E. F. **Black rot and mildews of the vine.** Amer. Fruit Grower 45<sup>6</sup>: 12. 3 *fig.* 1925.—Black rot, downy mildew and powdery mildew of grapes are discussed, together with the effect of environmental conditions in influencing the development of black rot and mildews, and control measures.—*Arthur S. Rhoads.*

7966. JENKINS, ANNA E. **Brown canker of roses.** Mycologia 17: 87-88. 1925.—*Diaporthe umbrina* was especially injurious on rose blossoms at the New York Botanical Garden during 1924.—*G. R. Bisby.*

7967. KASAI, M. **Fusarium solani (Mart. pr. p.) App. et Wr. as the causal agency of dry-rot in the "Konnyaku" corms.** Ber. Ohara Inst. Landw. Forsch. 2: 463-472. *Pl. 20, 21.* 1924.—A dry rot attacks the corms of "Konnyaku" (*Amorphophallus Konjac* K. Koch) in storage. The cultural and morphological characters are given in detail.—*H. S. Reed.*

7968. KLEBAHN, H. **Beitrag zur Kenntnis der Getreideroste.** II. [Contributions to the knowledge of the cereal-rusts.] Zeitschr. Pflanzenkrank. 10: 70-96. 1900. Translation in Library, U. S. Dept. Agric.: Washington, D. C., 1924.—The author summarizes his investigations as follows: (1) The experiments do not confirm the assumption that sporidia of cereal rusts are capable of infecting cereal plants; they also contradict the statements that sporidia of other heteroecious rust-fungi have the power to infect their teleutosporic hosts. (2) The results obtained through cultivation experiments with cereals in rooms free from germs, as well as sowing experiments with seed of rust-diseased plants, favor very little the hypothesis that rust diseases may be transmitted through the seed. (3) When the last mentioned experiments did give a positive result, the suspicion is inevitable that some infection, beyond control, had occurred. Transmission of rust by means of seed cannot be considered certain unless based upon microscopical examination. (4) If, however, rust diseases in isolated cases may possibly be transmitted through the seed, we must then expect, in accordance with the behavior of the rust-fungi, that an outbreak will take place very early. (5) The old doctrine as to the cereal rusts spreading by spores carried by the wind or by animals receives a strong support in the demonstration of the presence of cereal rust spores and other spores in the dust deposited from the air. This result encourages further experimentation along this line. (6) The importance of the aecidia must not be underestimated, and it would be highly desirable to look for aecidia in cereal rusts where hitherto not found. (7) *Puccinia dispersa* Erikss. is connected with *Anchusa arvensis* and *A. officinalis* by an aecidium. (8) These studies do not support the belief that short-lived rust-fungi (such as lack a perennial mycelium) leave germs in perennial plants, through which the rust disease develops again in the following period of vegetation without a new infection.—*From Author's summary.*

7969. McCLAIN, R. L. **Scab of Christmas berry, Photinia arbutifolia Lindl., due to Fusicladium photinicola n. sp.** Phytopathology 15: 178-182. *Fig. 1-2.* 1925.—A scab disease on leaves and fruit of *Photinia arbutifolia* has been under observation in California since 1912. Recently the morphological and cultural characters of the causal fungus have been studied in comparison with *Venturia pirina* Aderh. from pear. Both were isolated in single spore cultures and grown upon a number of media. Certain characteristic differences between the 2 fungi were observed on all media. The most constant and characteristic differences, however, were found in the shape and size of the conidia and conidiophores. The characters of the fungus on *Photinia* do not agree with descriptions of any other *Fusicladium* and it is therefore described as a new species, *Fusicladium photinicola* n. sp. No ascigerous stage of the fungus was observed.—*B. B. Higgins.*

7970. MAFFEI, LUIGI. Sul parassitismo di "*Phomopsis cinerescens*" (Sacc.) Trav. sopra i rami del fico. [The parasitism of *Phomopsis cinerescens* on the branches of the fig.] Riv. Patol. Veg. 15: (1-11). Fig. 1-6. 1925.—The pathological anatomy of the host is given, followed by a detailed description of the fungus and a discussion of its synonymy.—Lillian C. Cash.

7971. MIYAKE, C. Gibberella Saubinetii (Mont.) Sacc. as a causal fungus of the wilt disease of horse bean. Ber. Ohara Inst. Landw. Forsch. 2: 435-441. Pl. 14-15. 1924.—This disease became very prevalent in Japan during wet seasons. It has an optimum temperature near 30°C. but even at 5°C. a certain amount of growth is possible. Morphological and cultural characters are described.—H. S. Reed.

7972. NISIKADO, Y., AND C. MIYAKE. Morphological and physiological studies on a new *Helminthosporium* found on *Leptochloa chinensis* Nees. Ber. Ohara Inst. Landw. Forsch. 2: 473-490. Pl. 22, 2 fig. 1924.—On the basis of morphological and cultural characters the name *Helminthosporium Leptochloae* is proposed. Inoculations made on 21 hosts showed that all except the host plant, *L. chinensis*, were resistant.—H. S. Reed.

7973. PRITCHARD, F. J. Tomato wilt and varietal resistance. Seed World 17: 7-9. Illus. 1925.—(For abstract see this issue, Entry 7810.)

7974. REES, J. A new disease of cultivated *Campanulas* due to *Sclerotinia sclerotiorum* (Massee). Welsh Jour. Agric. 1: 188-190. 1925.—This fungus was shown to be the cause of death of *Campanulas* near Cardiff, South Wales, in July, 1923, and June, 1924. In one instance colliery (horse) manure had been dug in on meadow soil. The disease abated in drier weather and was controlled by removing and burning diseased stems, and by soil sterilization.—Author.

7975. RHODS, ARTHUR S. Root rot of the grapevine in Missouri caused by *Clitocybe tabescens* (Scop.) Bres. Jour. Agric. Res. 30: 341-364. Pl. 1-6. 1925.—A mushroom root rot of grapevines, of rather common occurrence in various localities in the Ozark section of Missouri, is reported and described in detail. The rhizomorph-producing fungus believed to be the cause proved to be a species of *Clitocybe* described by various writers in this country under the names *C. monadelpha* (Morg.) Sacc., *C. aquatica* Banning & Peck, *Armillaria mellea exannulata* Peck, and *C. parasitica* Wilcox, all of which are clearly but different names for the same fungus and identical with *Clitocybe tabescens* (Scop.) Bres. of Europe. A detailed discussion is given of the history, nomenclature, and geographic distribution of this fungus, together with complete lists of the synonyms and illustrations believed to be authentic. A detailed description is given of the characteristics and behavior of the *Clitocybe* root-rot fungus in pure culture and a comparative study is made between the form isolated by the writer in Missouri and one secured from a *Eucalyptus* root from Florida. Brief notes are also given upon the occurrence of *Clitocybe tabescens* in Florida, as subsequently noted by the author. Although cases of root rot of grapevines have been reported in various sections of the U. S. A. since the discovery of the disease in Missouri in 1887, this trouble, with the few exceptions where the causal organism has actually been determined, has generally been attributed to *Armillaria mellea* or *Dematophora necatrix*, as a rule on assumption rather than from definite knowledge. The present investigation affords very definite evidence that *Clitocybe* root rot, hitherto reported to attack only forest, fruit and shade trees, is responsible for a considerable quantity of root rot of grapevines in Missouri and probably also in other southern states from which this trouble has been reported. The vineyard losses in Missouri due to *Clitocybe* root rot, which appears to be a comparatively slow-working disease, vary from the death of a few vines each year to such rapid destruction that within a few years parts of the vineyard may be heavily depleted. It is believed that attention directed to the thorough preparation of newly cleared lands, adequate drainage and prevention of barking or other injury of the vine roots when cultivating the vineyard, will prove valuable measures in preventing the losses. The various methods for the destruction of such root-rotting fungi on newly infected vines and in the soil are briefly reviewed and the need for further experimentation is pointed out. A complete bibliography of the literature referring to *Clitocybe tabescens*, together with references to certain other root-rotting fungi attacking grapevines, is appended.—Author.

7976. STEVENS, N. E. Notes on blueberry and cranberry diseases. Proc. Amer. Cranberry Growers Assoc. 55: 7, 10. 1925.—Four diseases of some importance on blueberries are



noted; blossom blight caused by *Botrytis* sp., "witches broom" caused by *Calymptospora* sp., a rot of the berries caused by *Sclerotinia* sp., and a twig blight caused by *Phomopsis* sp. The occurrence of closely related fungi on some species of cranberry is noted.—*Frederick V. Rand.*

7977. TALBERT, T. J. Apples or cedars in the fruit industry. Amer. Fruit Grower 45: 7, 28, 29. 5 fig. 1925.—This is a popular account of apple rust, with special reference to the importance, distribution, susceptibility of apple varieties, injury to the leaves, injury to the fruit, injury to the trees, cause of the disease, how it is spread, and control measures.—*Arthur S. Rhoads.*

7978. TORO, R. A. Un enfermedad importante de las cebollas en Puerto Rico. [An important disease of onions in Porto Rico.] Porto Rico Insular Exp. Sta. Circ. 71. 1-6 1 fig. 1923.—A fungus disease caused great loss in the northeast district of the Island. Microscopical examination revealed the presence of *Macrosporium parasiticum* Thüm. The presence of *Thrips* sp. was also noticed.—*J. I. Otero.*

7979. VALCKENIER-SURINGAR, J. Eine Ulmenkrankheit in Holland. [An elm-disease in Holland.] Mitteil. Deutsch. Dendrol. Ges. 32: 145-147. 1 fig. 1922.—Trees up to an age of 30 years show in the top a large amount of dry twigs and leaves, and the green leaves are less succulent than those of healthy trees. In winter such trees are recognized by their crooked shoots. First a few dry twigs appear; later the crown dies out and sometimes the whole tree dies. Trees whose leaves dried out in spring, put forth new leaves only to wither again. When the foliage dies in summer or fall the tree itself succumbs. In cross sections a ring of small brown spots near the bark is seen; sometimes there is a 2nd or a 3rd ring. *Ulmus monumentalis* (grafted upon *U. campestris latifolia*) shows the disease to a higher degree than *U. campestris latifolia*. The disease was not found upon *U. vegeta*, but is present upon *U. americana*. In the brown spots no mycelium could be located, but every culture derived from a cut surface produced *Cephalosporium acremonium* and secondarily (never primarily), *Graphium penicillioides*. An inoculation of this fungus caused brown spots, which, however, have not been further investigated. Recent work of B. Schwarz is also reviewed.—*J. C. Th. Uphof.*

7980. WHETZEL, H. H., AND JOHN M. ARTHUR. The gray bulb rot of tulips caused by *Rhizoctonia tuliparum* (Klebh.) n. comb. New York Agric. Exp. Sta. [Cornell] Mem. 89: 1-18. Pl. 1-8, fig. 1-6. 1925.—This paper reports what appears to be the 1st occurrence in America of the tulip bulb rot fungus, *Sclerotium tuliparum* Klebahn, so common in Holland and Germany. Since all previous investigations on this disease have been made in Europe, especially by Dutch and German workers, a rather full review of previous literature is presented. The disease was known in Holland as early as 1883, where it has since been one of the major troubles of the bulb growers. It is also recorded from Germany, Switzerland and Russia, where, however, it is of minor importance. Cultures of the pathogene were isolated from diseased bulbs in England. The authors hold the disease to be of relatively little importance to tulip growing in America so long as flower production is the chief object. Other workers have recorded the disease as occurring on hyacinth, gladiolus, yellow narcissus, *Dicentra spectabilis*, *Iris hispanica*, *Fritillaria imperialis*, and *Scilla sibirica*. Klebahn failed to get infection with the pathogene on *Muscaria botryoides*, *Narcissus poeticus*, *Galanthus nivalis* and *Crocus vernus*. Westerdijk obtained infection in 1 case on onions but no infection on beets, carrots and potatoes. The authors made no inoculation experiments to determine range of susceptibles.—The symptoms of the disease are detailed and illustrated by photographs.—The extensive infection experiments of Klebahn are accepted as sufficient proof of the pathogenicity and causal relationships of the pathogene to this disease which the present authors have called "gray bulb rot." Comparative morphological and pure culture studies of the pathogene along with *Botrytis tulipae* (Lib.) Hopkins, *Sclerotinia bulborum* Wakker, *Sclerotinia sclerotiorum* (Lib.) Masee, *Corticium vagum* B. & C., and *Corticium stevensii* (auth.) indicate its generic relationship with the last 2 species named. This is especially clear from a comparative study of the structure of the sclerotia and the morphology of the mycelium. Since the perfect stage has not been obtained the fungus has been transferred to the genus *Rhizoctonia* in order to indicate this relationship. Experimental work on the control of the disease covering 2 years indicates that soil disinfection with formalin at the rate of 1-1½ pounds per 5-6 square feet of soil, diluted with sufficient water to wet the earth to a depth of 6-8

inches, will largely destroy the pathogene. Steam-pan sterilization for  $\frac{1}{2}$ -1 hour also gave excellent control. Soil disinfection with carbolineum, as recommended by Ritzema Bos, was not tested.—*Authors*.

7981. WIEDEMANN, [EILHARD]. Hallimasch und Wurzelschwamm, zwei gefährliche Waldfeinde. [Honey fungus and root rot, two dangerous forest enemies.] Biol. Reichsanst. Land- u. Forstwirtsch. Flugbl. 22. 4 p. Fig. 1-2. 1924.—The honey fungus (*Clitocybe mellea*, *Armillaria mellea*, or *Agaricus melleus*) is especially harmful to young trees of *Picea*, *Pinus silvestris*, and *P. strobus*, and to older trees of *Abies*. It also seriously injures plums, cherries, walnut, chestnut, and oaks, while European larch and Douglas fir are less susceptible. The best way to prevent damage is to avoid dense young stands, especially of conifers, to thin early and heavily, and to improve soil and humus conditions.—The root rot (*Placodes annosus*, *Polyporus annosus*, or *Trametes radiciperda*) attacks practically all species, but is most harmful to spruce and Scotch and white pines, especially in pure stands on old fields or heaths. Instead of growing these species in localities where the fungus is present, oak, beech, larch, fir, or Douglas fir should be used, and mixed stands are recommended.—*W. R. Sparhawk*.

7982. WILCOX, R. B. The spraying of black raspberries. Amer. Fruit Grower 45: 4, 20, 23. *Illus.* 1925.—The spraying of black raspberries for the control of the most common disease, namely anthracnose, is discussed with special reference to some of the risks of injuring the plants by spraying according to the methods at present recommended. The writer desires to stimulate thought and discussion on the subject in order to bring to light other experiences and to prompt further experiments.—*Arthur S. Rhoads*.

7983. WINSTON, J. R. Control melanose and thereby prevent "ammoniation." Citrus Indust. 6: 9, 40, 44. 1925.—After considering the economic importance of melanose and ammoniation, the former disease caused by *Phomopsis citri* is discussed in detail with reference to symptoms, cause, time of infection, severity in different sections of Florida and on different grove sites, relative susceptibility and resistance of various citrus fruits, and control. The use of Bordeaux-oil emulsion for melanose control is said to check the development of fruit ammoniation and other forms of dieback.—*Arthur S. Rhoads*.

#### DISEASES CAUSED BY BACTERIA

7984. LEVINE, MICHAEL. Crown gall on *Bryophyllum calycinum*. Bull. Torrey Bot. Club 51: 449-456. Pl. 10. 1924.—Further experiments on the effect of inoculation of *Bryophyllum calycinum* with *Bacterium tumefaciens* lead to the conclusion that *B. tumefaciens* "does not stimulate bud development, even in the presence of conditions which favor it. *B. tumefaciens*, it appears, induces a neoplasm which offers mechanical obstruction to the transportation of fluids, which, in turn, calls forth bud proliferation."—*P. A. Munz*.

7985. SMITH, ERWIN F. Cancer in plants and in man. Science 61: 419-420. 1925.—It has recently been reported by Blumenthal in Berlin that schizomycetes isolated from human carcinoma may be caused to produce malignant transplantable tumors in a small proportion of white rats. One form indistinguishable from *Bacterium tumefaciens* has been used to produce crown gall tumors on plants. Part of the experiments have since been repeated at Dresden with good success and should be repeated in other laboratories.—*C. J. Lyon*.

7986. SMITH, ERWIN F. Le crown-gall. Rev. Path. Vég. et Entomol. Agric. 11: 219-228. 1924.—Following a general discussion of the problems of crown-gall, the author summarizes the results of recent experiments, citing a case of apparent local immunity in 2 of a large number of plants of *Ricinus communis* inoculated with *Bacterium tumefaciens*, and the occurrence of a secondary stem in the center of the normal stem of *Helianthus annuus* inoculated with the same organism.—Among others the following results of physico-chemical studies are given. If the sap of the plant is normally acid, that of the tumor is always more alkaline than the normal sap. If the sap of the plant is neutral or nearly neutral (pH. 7.00), the sap of the tumor is more acid than the normal sap. In case the juice of the plant is very acid, the host is absolutely immune to attacks of the parasite. In the tissues of the tumor there are always acids combined with ammonia that can not be demonstrated in millivolts interpretable as pH, but which are demonstrable by electrometric titration with sodium hydroxide. Often the quantity of acid in the tumor is double that existing in the normal tissue. In many of these



tumors (those of beet, *Ricinus* and *Helianthus*) there is a remarkable excess of oxidizing enzymes. For example, the expressed juice of beet-tumors exposed to the air for some minutes becomes black as ink, but there is no notable increase in H-ion concentration.—*Lillian C. Cash.*

#### DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

7987. ANDERSON, C. Note concernant les recherches pratiquées sur le latex de quelques Euphorbiacées de Tunisie. [Note on studies of the latex of some Euphorbiaceae of Tunis.] Bull. Soc. Path. Exotique 18: 257-258. 1925.—No flagellates were found in 6 species of *Euphorbia* or in 4 hemipterous insects frequenting *Euphorbia*. Studies extended over 3 years and involved examination of fresh and stained material, and culture in NNN. medium. Inoculations of *Euphorbia* latex into dogs, cats, rats and mice, were without result. Kala-azar occurs in Tunis.—*Philip Brierley.*

7988. JARVIS, E. Cane pest combat and control. Queensland Agric. Jour. 22: 273-275. 1924.—In combating the grubs of the cane beetle (*Lepidoderma albohirtum*), the effects of treatment of the soil with small amounts of calcium cyanide are described. No harm to the growing cane was noticed and from the results of previous experiments it is assumed that the grubs of the beetle would be destroyed.—*W. D. Francis.*

7989. JARVIS, E. Cane pest combat and control: Entomologist's report. Queensland Agric. Jour. 22: 413-416. 1924.

7990. JARVIS, E. Cane pest combat and control. Queensland Agric. Jour. 23: 68-69. 1925.—Notes on the occurrence of the following insects are made: *Lepidoderma albohirtum*, *Prosoplus misellus* and *Rhyphardia morosa*.—*W. D. Francis.*

7991. JARVIS, E. Cane pest combat and control. Queensland Agric. Jour. 23: 248-250. 1925.—This article contains notes on the termite problem in Queensland sugar cane fields, and accounts of experiments to destroy this pest.—*W. D. Francis.*

7992. JARVIS, E. The Exoskeleton in *Lepidoderma* as an influencing factor in the economy and control of our grey-back cockchafer. Queensland Agric. Jour. 23: 244-248. Pl. 48. 1925.—The modifications of the organs of the insect are considered in relationship to its habits. From the external anatomy of *Lepidoderma albohirtum* valuable hints relative to methods of combating this notorious cane pest are ascertained. The external anatomy of the species is illustrated by a plate containing 42 figures.—*W. D. Francis.*

7993. JARVIS, HUBERT. Fruit fly investigation. Queensland Agric. Jour. 23: 185-187. 1925.—This article consists chiefly of a report on work carried out and observations made by the author on the insect pest, *Chaetodacus tryoni*.—*W. D. Francis.*

7994. MASSALONGO, C. Malattia parassitaria osservata sopra una pianta di "*Syringa vulgaris* L." [A disease of *Syringa vulgaris*.] Bull. Soc. Bot. Ital. 1924: 162-164. 1924.—The leaves of affected plants have an olivaceous or bronze tint. Examination of thin transverse sections of the tips shows that the cells of the upper epidermis lose their turgor, are plasmolized; the cytoplasm is contracted and ferruginous in color, causing the abnormal color of the leaves. This necrosis of the epiphyll extends gradually to the lower tissues of the mesophyll; finally the leaves dry up with consequent injury to the plant. The disease was found to be due to an acarid. [Since the publication of this article, the acarid in question has been identified by A. Napela as a new species, *Phyllocoptes Massalongoanus*.]—*Author (translated).*

7995. TRYON, H. Rust scab or rust in bananas. Queensland Agric. Jour. 22: 289-290. 1924.—The author concludes that as a result of researches conducted in the past this disease is due to a minute insect, a species of *Euthrips*.—*W. D. Francis.*

#### INFECTIOUS CHLOROSES (MOSAIC AND PEACH YELLOWS GROUPS, ETC.)

7996. ATANASOFF, D. New studies on stipple-streak disease of potatoes. Phytopathology 15: 170-177. Fig. 1-2. 1925.—The writer's observations on degeneration diseases indicate that some varieties of potatoes are masked carriers of these diseases. This he has now proved by direct experimental evidence in the case of stipple-streak disease. The varieties, Ashleaf and Koksiaan, growing near other varieties badly affected with stipple-streak,

appeared perfectly normal on superficial examination; but careful examination of the leaves and tubers showed some evidence of stipple-streak. Tubers of these 2 varieties have been planted during 4 successive years and continue to give apparently normal plants and good yields, although repeated inoculations from these to more sensitive varieties have shown them to be infected with a virulent form of stipple-streak. There is considerable difference in the degree of sensitivity of different potato varieties to this disease and in the less sensitive varieties the disease may be present without producing any apparent injury or visible symptom. This may account for many sudden and puzzling outbreaks of degeneration diseases.—*B. B. Higgins.*

7997. CHARDÓN, CARLOS E. **Mosaic investigations at Central Cambalache (preliminary report).** Jour. Dept. Agric. Porto Rico 8: 27-39. 11 fig. 1924.—This paper was read before the Association of Sugar Technologists of Porto Rico, 1924. The disease was first reported from Porto Rico by Stevenson in 1915, and it increased and became very general in 1919. After 1919, great advances were made in its control by practising roguing and by substituting Uba and P. O. J. seedlings for Crystalina, Rayada and other varieties. However, Uba proved unsatisfactory for some localities. The immediate region of Central Cambalache was especially favorable for the disease and was selected for experimental work which is reviewed by the author. There is less of the disease near the coast than in the interior and this region is recommended for nursery plantings. Varieties B. H. 10-12 and S. C. 12-4 have proved especially satisfactory.—*Melville T. Cook.*

7998. COOK, MELVILLE T. **Present knowledge of mosaic diseases.** Jour. Dept. Agric. Porto Rico 8: 50-54. 1924.—Read before the Association of Sugar Technologists of Porto Rico, June, 1924.—This is a brief review of the history and theories as to the causes of the mosaic diseases of various plants.—*Author.*

7999. KASAI, M. **Investigations on the Nelson's bodies as observed in the leaf roll, mosaic, and healthy plants.** Ber. Ohara Inst. Landw. Forsch. 2: 443-461. Pl. 16-19. 1924.—After a comprehensive survey of the literature, the author relates the results of observations made on diseases of various plants. He found fusiform, spindle-shaped, or sinuous bodies in the phloem tissues of both healthy and diseased plants. He regards Nelson's theory that protozoa were the cause of these diseases as untenable, believing that the bodies seen are normal or disintegrated nuclei.—*H. S. Reed.*

8000. SHEPHERD, E. F. S. **Mosaic disease serious in Reunion.** South African Sugar Jour. 9: 97, 99, 101. 1925.—Mosaic disease of one plant family is not entirely restricted to that family, and reference is made to an account of successful, artificial inter-transmission of mosaic diseases among the families Cucurbitaceae, Solaceae, and Leguminosae, and of the artificial transmission of the sugar-cane mosaic to tobacco. The author has never observed inter-family transmission of mosaic in nature, and refers to the fact that although mosaic of tobacco has existed for years in Mauritius, mosaic of sugar-cane does not exist there.—In Reunion certain varieties of cane show the secondary symptoms of mosaic even during the 1st season of infection. There are 2 sugar sections on the island of Reunion, the Leeward, extending along the western slopes to the western edge of Brule du Baril, and the Windward, extending along the northern and eastern slopes from Cap Bernard to Bois Blanc. The center of the island is occupied by a mountain range, and the sugar plantations are on the slopes at altitudes ranging from sea level to 800 m. The mosaic disease is confined almost entirely to the Leeward section and in certain parts of this section is causing heavy damage. Its spread is in a northwesterly and southeasterly direction, being most rapid in the former, due probably partly to the prevailing winds from the southeast and partly to the fact that there is practically no cane cultivation at very high levels, where the spread is apparently more rapid than at lower levels. At only one place in the Windward section was a trace of mosaic observed, and this was a mild case on a variety the name of which is unknown. Although they fall ready victims and suffer badly from mosaic on the Leeward slopes, the Louzier and Port Mackay varieties were entirely free from the disease in the Windward section.—There are typical symptoms of mosaic of maize in both sections, showing that this disease has passed over the 2 barriers to its spread, namely, the mountains over La Possession and the Brule du Baril and the Grand Brule. In Reunion, Louzier contracts mosaic more readily and suffers more from it than any other variety. From it the disease has spread to Port



Mackay, which is almost as susceptible and intolerant, and to D. 131, D. 55, D.K. 74, White Tanna, Striped Tanna, No. 33, Batavia, and other varieties. These varieties, with the exception of Port Mackay, are on the whole more seriously affected by the secondary infection.—*Nellie E. Fealy*.

8001. STOREY, H. H. Streak disease, an infectious chlorosis of sugar-cane, not identical with mosaic disease. Rept. Imperial Botanical Conference 1924: 132-144. Pl. 1-2 (col.). 1924.—Evidence is presented to the effect that "streak" is actually an infectious chlorosis, and that it is not identical with mosaic. An argument in favor of the latter statement is the fact that a variety susceptible to streak may be immune to mosaic. The symptoms of streak, a list of plants affected, the effects of the disease and observations on infection phenomena are given.—*Lillian C. Cash*.

### NON-PARASITIC DISEASES

8002. BHOSALÉ, Y. P. Low temperature and root injury of the apple. Amer. Fruit Grower 45<sup>4</sup>: 12. 1925.—This is an account of investigations conducted by the Nebraska College of Agriculture to study the relative hardiness of scions and stock roots of the apple, and to determine the extent to which midwinter soil temperatures at various depths are influenced by culture and moisture content.—*Arthur S. Rhoads*.

8003. HEDRICK, U. P. Winter injury of fruit trees. Amer. Fruit Grower 45<sup>4</sup>: 3, 39. 1 fig. 1925.—Winter injury of fruit trees is discussed with reference to influence of soil on hardiness, amount of moisture in the soil, value of vigorous growth as a preventive, value of cover crops, fall versus spring plowing, relation of height of head, protective value of wind-breaks, difference in hardiness between trees from northern nurseries and those from the south, and relative hardiness of young and old trees.—*Arthur S. Rhoads*.

### DISEASES OF UNKNOWN CAUSE

8004. BARTHOLOMEW, E. T. Report on internal decline (endoxerosis) of lemons. California Citrograph 10: 274, 294, 303. Fig. 1-3. 1925.—The term "endoxerosis" is suggested as a technical name for the trouble which is commonly called internal decline or blossom-end decay. By means of auxographs the relationship of water movement in fruit and leaves was studied for varying climatic conditions and it was found that almost twice as much water was absorbed by branches which bore healthy lemons as by those which had borne fruit affected with internal decline. This condition was ascertained to be due to deposits of gum in the conducting vessels of both the abnormal fruit and the branches bearing them.—*C. S. Pomeroy*.

### GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

8005. BIGOT, A., ET H. VELU. Etude biologique de *Cryptococcus mirandei*, agent de la blastomycose des voies lacrymales de l'ane. [Biological study of *C. mirandei*, cause of blastomycosis of the tear ducts of the ass.] Bull. Soc. Path. Exotique 18: 231-235. 1925.—The character of growth on 8 solid and 14 liquid media is given. The organism tolerates acid and alkali, grows well at 30 and 37°C. on suitable media, ferments glucose and levulose with gas, does not affect lactose, galactose, mannite, saccharose, or maltose bouillon.—*Philip Brierley*.

8006. BRYAN, A. B. A new wrinkle in spraying. Amer. Fruit Grower 45<sup>3</sup>: 14. 1925.—A gravity spraying system recently installed in a large apple orchard in the mountain section of northern Georgia is described.—*Arthur S. Rhoads*.

8007. COTTRELL-DORMER, W. Cane pests and diseases. Queensland Agric. Jour. 22: 275-277. 1924.—The occurrence of several diseases and insect pests in Queensland sugar cane fields is outlined.—*W. D. Francis*.

8008. COTTRELL-DORMER, W. Cane pests and diseases. Queensland Agric. Jour. 22: 419-424. 1924.

8009. COTTRELL-DORMER, W. Cane pests and diseases. Queensland Agric. Jour. 23: 66-68. 1925.—Gumming disease, leaf stripe, mosaic and insect pests in Queensland sugar-cane fields are dealt with.—*W. D. Francis*.

8010. COTTRELL-DORMER, W. Cane pests and diseases. Australian Sugar Jour. 16: 833-835. 1925.—Leaf stripe and leaf scald of sugar cane were met with in the Mossman district and the sclerotial disease, *Marasmius* and rust were fairly prevalent. Leaf stripe, which has been present a number of years, is described and control measures are indicated. It is most injurious in ratoon cane in badly drained land, and attacked B. 147, M.Q. 1, D. 1135, and H.Q. 426, the 2 last named being but slightly affected. In the western half of the Mossman district leaf scald was found, fields of H.Q. 426 and N.G. 24B being most affected and some fields of Badila slightly affected. A species of *Marasmius* does slight injury to young canes. Bunching of the leaves of Badila and other canes proved to be due to the twisting of the innermost growing point of the cane when its growth is faster than that of the surrounding tissues, this following a period of very good growing weather. Symptoms of the gumming disease are described.—Mosaic occurs in the Cairns and Mulgrave districts. It was found on Badila, H. 109, and H.Q. 426.—*Nellie E. Fealy*.

8011. COTTRELL-DORMER, W. Diseases of sugar-cane. Australian Sugar Jour. 26: 675-679. 1925.—The characteristic symptoms and control measures for gumming disease (bacterial), pineapple disease (*Thielaviopsis paradoxica*), leaf stripe and mosaic are given.—*Lillian C. Cash*.

8012. CURTIS, H. P. The double spray gun. Amer. Fruit Grower 454: 37. 1925.—A brief description is given of the construction and advantages of the double nozzle spray gun, which is said to be the greatest improvement in spraying equipment since the invention of the spray gun.—*Arthur S. Rhoads*.

8013. D'HERELLE, F. Immunity in natural infectious disease. Authorized English ed., translated by G. H. SMITH. 399 p. The Williams & Wilkins Co.: Baltimore, 1924.—The subject is treated under the following headings: The reactions of living matter; reactions against inanimate agents; the reaction against bacteria; the ultraviruses and immunity against them.—*Lillian C. Cash*.

8014. MONTEMARTINI, LUIGI. Rassegna fitopatologica per l'anno 1924. [Phytopathological review for 1924.] Atti Ist. Bot. Univ. Pavia Ser. III. 2: IX-XXIII. 1925.—The author mentions as noteworthy the unusual inroads made during the year by various animal parasites. Among the diseases under investigation are a wilt of figs due to a species of *Phomopsis*, and a gummosis of grapes. The results of tests with insecticides and fungicides are given. Diseases of crops determined during the year are listed under the type of plant involved, as forage plants, truck crops, fruits, etc.—*Lillian C. Cash*.

8015. MOODIE, ROY L. Paleopathology: An introduction to the study of ancient evidences of disease. 567 p. 117 pl., 49 fig. Univ. Illinois Press: Urbana, 1923.—"The method of treatment in general has been to follow the succession of evidences seen in the geological record" and this account begins with the early Paleozoic.—The work is written mostly from the medical standpoint but chapter 3 (p. 99-108), by EDWARD W. BERRY, discusses pathological conditions among fossil plants under the following subheadings: Extinction, parasitism, callus and injury, fossil fungi, bacterial activity, spot fungi, activities of insects, teratology (with pl. 12-13).—"The present brief sketch must . . . be regarded as merely an enumeration of some of the more obvious records that may be considered as coming under the head of wounds and parasitism irrespective of whether or not they may be included under the subject of pathology in the strict sense."—Disorganization of cell walls by bacterial activity has been observed frequently in fossil woods of all geological horizons from the lower Carboniferous to the present. Large numbers of fossil spot-fungi have been recorded.—Insect activities are found not only in fossil wood, but in tunnels of leaf miners in fossil leaves. Abnormal leaves showing malformation in outline or development of puckers are sometimes preserved as fossils.—"The study of pathological conditions in fossil plants may be said to be in its embryonic stage of development . . . nor does it seem possible ever to go beyond such facts as are furnished by evidences of traumatism caused by wounds or by insect or fungal activities.—The pathological effects of such factors as too great or too little moisture, too much or too little light, or too great or too small temperatures—such as etiolation or chlorosis, are probably beyond the reach of paleobotanical investigation."—*Frederick V. Rand*.

8016. MURRAY, J. C. Cane pests and diseases. Northern areas. Australian Sugar Jour. 16: 837-838. 1925.—Where lime is used there is always less foot rot than where the tex-



ture of the soil is bad and it is not treated with lime. Good results are obtained from bone dust. Only a small amount of fertilizer should be placed in the drills at planting, the bulk to be applied when the cane is about 18 inches high, in the interspace about a foot away from the plants.—*Nellie E. Fealy*.

8017. NILSSON-EHLE, H. *Berberisfragen*. [The barberry problem.] (Translation by THEO. HOLM in Library U. S. A. Dept. Agric., Washington, D. C.) Landtmannen Tidsskr. Landtman 1924: 49-50. 1 fig. 1924.—The provisions of the barberry law of 1918 are given. The greatest weakness in the barberry eradication campaign and one which must be corrected as soon as possible is the sale and planting of *Berberis*.—*Lillian C. Cash*.

8018. ONG, E. R. DE, AND W. C. ROOT. *The effect of calcium carbonate on Bordeaux mixture*. *Phytopathology* 15: 183-186. Fig. 1-2. 1925.—Two sets of experiments were conducted in order to determine the effect of calcium carbonate on the physical properties of Bordeaux mixture. In the 1st test, known quantities of calcium carbonate were added to the calcium hydrate. In the 2nd, commercial hydrated lime was used after the amount of carbonate present had been determined. In both cases the results were similar. The time required for the Bordeaux mixture to settle out was almost inversely proportional to the percentage of calcium carbonate present. Hydrated lime containing more than 20% of calcium carbonate was not satisfactory for making Bordeaux mixture.—*B. B. Higgins*.

8019. PARK, W. H., A. W. WILLIAMS, AND C. KRUMWIEDE. *Pathogenic micro-organisms. A practical manual for students, physicians and health officers*. 8th ed. x + 811 p. 9 pl., 211 fig. Lea & Febiger: Philadelphia and New York, 1924.—This edition is enlarged and thoroughly revised. The grouping of the different micro-organisms is made to conform more closely to the classification adopted by the Society of American Bacteriologists and new terminology suggested by the society has been added to the older common names. The many additions to our knowledge have necessitated completely rewriting many parts of the book. The sections on immunity have been amplified, the experience of the authors to date with active immunization against diphtheria being given. Other subjects in which notable additions have been made are the probable value of certain vaccines and serums, the pyogenic cocci, the paratyphoid bacilli, and the "higher" bacteria. The recent additions to our knowledge of scarlet fever, measles, typhus fever, Rocky Mountain fever and tularemia have received due attention. The chapters on media and complement fixation have been revised.—*Authors' preface*.

8020. STILES, C. W. *Experimental chemical and bacteriological pollution of wells via the ground water route*. (Abstract.) *Science* 61: 522. 1925.

8021. TAUBENHAUS, J. J. *Diseases of greenhouse crops and their control*. xv + 429 p. 82 fig. E. P. Dutton & Co.: New York, 1920.—"Plants under greenhouse culture are far from being subjected to normal conditions. . . . Because of this fact greenhouse plants are naturally more susceptible to diseases indoors than similar plants grown in the open. The literature on diseases of greenhouse crops in the United States is rather fragmentary and scattered. . . . It is, therefore, the aim of the present volume to bring together available information on the subject and to place it at the disposal of greenhouse men. . . . The book is intended as a guide to practical growers, teachers, students and investigators in plant pathology." Part I takes up healthy and sick soils and treatment of the latter. Part II discusses light in relation to greenhouse culture, moisture requirements and breaking the rest period of plants. Parts III to VI are concerned, respectively, with diseases of greenhouse vegetables, of ornamentals, greenhouse pests, and methods of control. A glossary and an index are provided.—*Frederick V. Rand*.

8022. ZOJA, ALFONZA. *L'Immunità nelle piante*. [Immunity in plants.] *Atti Ist. Bot. Univ. Pavia Ser. III*. 2: 15-47. Pl. 1-2. 1925.—(1) Seedlings grown on media containing extract of cultures of *Helminthosporium* are said to resist infection with living forms of the fungus. (2) The same phenomenon of immunity is met with in the case of seedlings grown on the sap of diseased plants. (3) This immunity lasts for some time, certainly more than a month. (4) The active principle is sensitive to the action of heat, resisting a temperature of less than 50-55°, but destroyed by boiling and therefore of an enzymatic nature.—*Lillian C. Cash*.

## PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

HEBER W. YOUNGKEN, *Editor*E. N. GATHERCOAL, *Assistant Editor*

(See also in this issue Entries 7757, 7833)

8023. ANONYMOUS. *Candelillawachs*. [*Candelilla wax*.] *Tropenpflanzer* 23: 95. 1920.—*Candelilla wax*, said to be derived from *Euphorbia cerifera*, is mainly produced in the State of Nuevo Leon, Mexico. The shrubs which have been uprooted are boiled in water with the addition of  $H_2SO_4$  which causes the wax to come to the surface. The latter is then removed and solidified in pots.—*J. C. Th. Uphof*.

8024. ANONYMOUS. *Mowrasaat*. [*Mowra seed*.] *Tropenpflanzer* 23: 224. 1920.—*Mowra seed* is said to be derived from *Illipe latifolia* occurring in central and southern India, and from *I. longifolia*, in southern India and Ceylon. The seed contain 55% of fat. Since the seed contain much saponin they are not suitable as cattle fodder without further treatment. *I. butyacea* from northern India produces *phulwa* fat. When properly cleaned *mowra* fat is yellow, *phulwa* fat is white.—*J. C. Th. Uphof*.

8025. BRAUN, K. *Pflanzen aus Deutsch-Ostafrika, ihre Namen und Verwendung bei den Eingeborenen*. [Plants of German East-Africa, their names, and the uses to which they are put by the natives.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 368-381. 1924.—The following plants are named together with the uses, both economic and medicinal, to which they are put by the natives, the latter being tabulated according to localities. Native names are also given of *Abrus precatorius* L., *Abutilon graveolens* (DC) Woght & Arn., *Acalypha* sp., *Cassipoua filiformis* L., *Ochna* sp., *Ocotea usambarensis* Engl., *Oncoba spinosa* Forsk., *Paullina pinnata* L. *Pentas* sp. and *Plumbago zeylanica* L.—*Elmer H. Wirth*.

8026. CARY, C. A., E. R. MILLER, AND G. R. JOHNSTONE. *Poisonous plants of Alabama*. Alabama Polytechnic Inst. Ext. Serv. Circ. 71. 1-42. 40 fig. 1924.—The authors discuss 57 poisonous plants found in Alabama. For most of these the distribution, poisonous constituents, toxic parts, toxic action, animals susceptible, and treatment are given. General directions for handling poisoned animals and a bibliography of references are also included.—*H. W. Youngken*.

8027. DANCKWORTT, P. W., AND P. LUY. *Zur Kenntnis der Alkaloide der Yohimberinde*. [Contribution to the knowledge of the alkaloids of yohimbi bark.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 81-104. 1924.—Besides the literature and theory of the subject, this paper contains an experimental part covering the constitution, and the physical and chemical properties of the alkaloids of the bark of *Corynanthe yohimbe*.—*Elmer H. Wirth*.

8028. FEIST, K., AND H. BESTEHORN. *Über den Gerbstoff des Eichenholzes. Methoden zur Gewinnung und Reinigung von Gerbstoffen*. [Oak tannins. Methods of isolating and purifying tannins.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 291-305. 1924.—Various methods for the extraction, purification and separation of tannins are discussed. An electrolytic method is of particular interest.—*Elmer H. Wirth*.

8029. GADAMER, J., H. DIETERLE, ANNA STICHEL, M. THEYSSEN, AND K. WINTERFELD. *Zur Kenntnis der Chelidoniumalkaloide*. [The Chelidonium alkaloids.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 249-277, 452-500, 578-612. 1924.—The alkaloids of *Chelidonium majus* were examined and, with the aid of several reactions, their constitutions were shown.—*Elmer H. Wirth*.

8030. HAEUSSLER, ERNESTO. *Giftigkeit der brasilianischen Eibe, Podocarpus Lambertii Klotzsch*. [Toxicity of the Brazilian yew *Podocarpus Lambertii* Klotzsch.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 247. 1922.—The writer mentions that, in Brazil, *Podocarpus Lambertii* is poisonous to horses but not to cattle or pigs.—*J. C. Th. Uphof*.

8031. ISRAEL, W. *Ueber die Giftigkeit der Rhododendron und Azalien*. [The toxicity of *Rhododendron* and *Azalea*.] *Mitteil. Deutsch. Dendrol. Ges.* 31: 286-287. 1921.—All parts of *Rhododendron* and of *Azalea* are poisonous. The poison acts similarly to that of *Ledum*. Goats are said to like the hard leaves and to become ill within a short time after eating them. If castor oil is not administered early, the animals will die. Cattle from mountain meadows



are said to evade the plants but it is claimed that other stable-animals eat them.—*J. C. Th. Uphof.*

8032. KANNIESER, FR. *Dendrologische Notizen.* [Dendrological notes.] *Mitteil. Deutch. Dendrol. Ges.* 31: 170-173. 1921.—The author states that the berries of *Viburnum opulus* are not poisonous, although emetic in action, and that *Picea excelsa* sometimes causes irritation of the skin. Cases are mentioned of death due to drinking water after eating apples; also to drinking beer after ingesting plums.—*J. C. Th. Uphof.*

8033. KOFER, LUDWIG. Über das Saponin der Primulawurzel. [The saponin from Primrose root.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 318-328. 1924.—The author examined the roots of *Primula veris*, *Primula elatior* and *Primula vulgaris*. Only 1 saponin, primulic acid, is present in the root and it occurs in amorphous form, soluble in water. It is identical with the primulin of previous authors. The haemolytic index is 1:190,000. Elementary analysis gave C 55.04% and H 8.03%. Further experiments concerning the physiological action and chemistry of the saponin are in progress.—*Elmer H. Wirth.*

8034. [NADSON, G. A., AND A. G. KONOКOTINA.] Надсон, Г. А., AND А. Г. Коноко́тина. "Жировые дрожжи"—*Endomyces vernalis* Ludw., как источник жира для питания и для технических целей. [Endomyces vernalis Ludw. as a source of fats for food and industrial uses.] (German summary.) Известна Главного Ботанического Сада Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. République Russe] 22 (Suppl. I): 41-51. 1923.—The present studies were carried out during the period 1917-1919. A 10-15 day-old culture of *Endomyces vernalis* on beerwort at 10-12°C. in most cases produced 15-28% of fat made up mostly of triolein. The fat-yeasts are able to utilize the nutrient medium more economically than ordinary beer yeasts—in 1 experiment giving 10 times more fat. A small addition of lactic acid to the beerwort raised the ultimate fat content. A good growth of yeast with abundant fat content was obtained on nutrient solutions containing molasses and human urine in different proportions. Especially interesting results of practical value were obtained by growing the yeasts on potatoes previously cut in small pieces and autoclaved. As high as 9% of fat (calculated on the dry weight basis at 60°C.) was obtained in some cases; this amount could undoubtedly be raised by special attention to races of yeasts and cultural conditions. Frozen and decayed potatoes may thus form a cheap and abundant source of fat for industrial uses.—*Frederick V. Rand.*

8035. [NADSON, G. A., A. G. KONOКOTINA, AND G. K. BURGVITS.] Надсон, Г. А., А. Г. Коноко́тина, AND Г. К. Бургви́ц. Морские водоросли, как источник получения дрожжей, жиров и спирта. [Marine algae as a source of yeasts, fats and alcohol.] (With German summary.) Известия Главного Ботанического Сада Р. С. Ф. С. Р. [Bull. Princip. Jard. Bot. République Russe] 22 (Suppl. I): 52-56. 1923.—The large brown algae (*Laminaria Alaria*, *Fucus*, etc.) growing luxuriantly in the northern seas of Russia and in the Far East offer inexhaustible and easily accessible supplies of this raw material of which so wide a utilization is possible. On extracts of *Laminaria saccharina*, various kinds of yeasts grow; *Endomyces vernalis* and several species of yeasts found on the surface of *Laminaria* and *Alaria* do especially well on this medium. If macerated and sterilized *L. saccharina* is thoroughly inoculated with certain yeasts, the algal mass, after 16 days at 10-12°C., is found to contain 6.22% of fat (calculated on dry weight at 60°C.) instead of the usual 0.3%. With more attention to cultural methods the quantity of fat could probably be still further increased.—By seeding the extract of *L. saccharina* with selected strains of yeasts (*Saccharomyces cerevisiae*, *S. ellipsoideus*, *S. betæ* n. sp., etc.) as well as with pure cultures of certain *Torula* forms isolated by the authors from the surface of living *L. saccharina*, an alcoholic fermentation was obtained.—The investigation is being continued.—*Frederick V. Rand.*

8036. ROSENTHALER, L. Variationsstatistik als Hilfswissenschaft der Pharmacognosie (13. Mitteilung): Der Oelgehalt von Ricinuskerne. [Variation statistics as an aid to the knowledge of pharmacognosy (13th. communication): The oil content of castor beans.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1924: 25. 1924.—Oil content variation statistics are given for 2 lots of castor beans; 78% of the beans in lot I yielded between 64 and 72%, and 65% of those in lot II, between 66 and 74%.—*Elmer H. Wirth.*

8037. ROSENTHALER, L. Variationsstatistik als Hilfswissenschaft der Pharmacognosie (14. Mitteilung): Der Oelgehalt von Arachissamen. [Variation statistics as an aid to the

knowledge of pharmacognosy (14th. communication): The oil content of peanuts.] Arch. Pharm. u. Ber. Deutsch. Pharm. Ges. 1924: 26-27. Variation statistics for the oil content of peanuts are given, together with a graph. The average percentage of oil was about 46.8.—*Elmer H. Wirth.*

8038. ROSENTHALER, L. Versuche mit Senfölen. [Experiments with mustard oils.] Arch. Pharm. u. Ber. Deutsch. Pharm. Ges. 1924: 126-127. 1924.—Reactions of mustard oil with potassium and sodium bisulphites are discussed.—*Elmer H. Wirth.*

8039. TOKUDA, Y., AND E. SUMITA. Studies on poisonous honey in Japan, I. On the source of the poisonous honey. (Summary in English.) Japanese Jour. Zootech. Sci. 13: 103-120. 1 pl. 1924.—The authors state that honey produced from the nectar of *Tripetaleia paniculata*, Sieb. & Zucc., is poisonous. This honey is light in color and has a peculiar odor. It causes coughs and various symptoms, such as vomiting, headache, palpitation and relaxation of voluntary muscles; no cases of death are known. The poisonous honey is produced at a time of year when it is not mixed with the major honey crops. The poisonous substances may be removed with animal charcoal but are not destroyed by heating at 100°C. for 1 hour. They do not contain nitrogen and are therefore not alkaloids.—*E. F. Phillips.*

8040. ZELLNER, JULIUS. Studien über die chemischen Bestandteile heimischer Arzneipflanzen. [Studies of the chemical constituents of native (German) medicinal plants.] Arch. Pharm. u. Ber. Deutsch. Pharm. Ges. 1924: 381-397. 1924.—Several constituents were isolated from the plants named below; empirical formulae were established for the constituents and reactions are given for several. The plants studied were *Thuja occidentalis* L., *Arctium maius* Schk., and the leaves and flowers of *Tussilago Farfara* L.—*Elmer H. Wirth.*

8041. ZÖRNIG, H. Die vergleichende Pflanzenanatomie im Dienste der Untersuchung von Arzneidrogen auf Verfälschungen. [Comparative plant anatomy in the investigation of adulteration of drugs.] Arch. Pharm. u. Ber. Deutsch. Pharm. Ges. 1924: 137-160. 1924.—The history of the relation between histology and pharmacognosy is given. The value of comparative anatomical studies in connection with the detection of adulterants in drugs is discussed with many illustrative examples. The paper concludes with a review of the literature and research covering this subject.—*Elmer H. Wirth.*

## PHYSIOLOGY

B. M. DUGGAR, *Editor*

W. J. ROBBINS, *Assistant Editor*

(See also in this issue Entries 7597, 7612, 7631, 7637, 7640, 7642, 7657, 7675, 7695, 7756, 7761, 7780, 7812, 7817, 7905, 7924, 7934, 7984, 8013, 8034, 8179)

## GENERAL

8042. PALLADIN, VLADIMIR I. Plant physiology. Edited by BURTON EDWARD LIVINGSTON. 2nd American Ed. xxxiii + 360 p. Fig. 1-173. Portrait. P. Blakiston's Son & Co.: Philadelphia, 1923.—"In this, the second edition of Palladin's book, a few typographical and other errors . . . have been corrected. In a few cases the wording of the text has been somewhat improved, especially where the old wording was not quite clear. Several new notes by the editor have been added, notably in Part II, Chapters V and VI."—A frontispiece portrait of Palladin is followed by a note of appreciation based mainly on a biographical sketch by N. I. KUZNETZOV in the 9th Russian edition of the book. A summary by section headings, placed at the end of each chapter, is also an entirely new feature. "In some cases new material has been introduced into the summaries, mainly to clear up a few vague transitions from one topic to another that occur in the text, and generally to help the student gain a logical and consistent viewpoint for the subject as a whole."—The main subject headings are as follows: Assimilation of carbon and of the radiant energy of the sun by green plants; assimilation of carbon and of energy by plants without chlorophyll; assimilation of nitrogen; absorption of ash constituents, of materials in general; movement of materials within plants;



material transformations in the plant; fermentation and respiration; general discussion of growth; growth phenomena that are controlled by internal conditions; influence of external conditions on growth and configuration; twiners and other climbing plants; movements of variation; development and reproduction.—A classified list of reference books is included. *Frederick V. Rand.*

8043. SNYDER, CHARLES D. [Rev. of: BAYLISS, WILLIAM MADDOCK. *Principles of general physiology*. 4th ed. xxviii + 832 p. Illus. Longmans, Green & Co.: London, 1924.] *Science* 61: 416-419. 1925.

### DIFFUSION, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

8044. BANUS, M. G. Über den Einfluss des elektrischen Stromes auf die Permeabilität von Pflanzenzellen. [The effect of electric current on the permeability of plant cells.] *Pflüger's Arch. Ges. Physiol. Menschen u. Tiere* 202: 184-194. 1924.—Under the influence of a direct or induced alternating current, cells of *Spirogyra* become permeable to sulphonic acid dyes to which they are normally impermeable. The cells which become colored with the dye otherwise remain normal and live about 3 days after the treatment. The dyed cells retain their color on being transferred to clear water. The epidermal cells of leaves of *Tradescantia discolor*, after exposure to the current, absorb  $\text{KNO}_3$  much more rapidly than non-stimulated cells. The  $\text{NO}_3$  thus taken up can be washed out immediately, but after 6 hours it cannot be removed. Original slight permeability thus returns with time. *Tradescantia* cells investigated with Fitting's plasmometric method showed increased permeability for mixtures of  $\text{NaCl}$  and  $\text{KNO}_3$  with  $\text{CaCl}_2$ .—*S. F. Cook.*

8045. FAIRBROTHER, FRED, AND HAROLD MASTIN. Studies in electroendosmosis. Part III. *Jour. Chem. Soc. [London]* 127: 322-327. 1925.

8046. OBERTH, J. Osmotische Untersuchungen an Trichomen. [Osmotic investigations on trichomes.] *Oesterreich. Bot. Zeitschr.* 74: 26-39. 1925.—*Gynura aurantiaca* Sch. Bip., *Kohleria digitaliflora* Fritsch, and *Inula Helenium* L. whose trichomes have colored cell sap were used in the investigation. The plasmolytic-volumetric method of Hoefler as modified by S. Prat was used for determining osmotic pressure. The osmotic pressure of the younger trichomes exceeds that of the older by 30-35%. In mature, several-celled trichomes the apical cells have 28% higher osmotic pressure than the basal. The decrease in osmotic pressure from the apex to the base is rapid at first; slower, later. The absorptive power was estimated by the method of Ursprung and Blum. That of the younger trichomes was about 6 atmospheres. In mature, several-celled trichomes it decreases from 5 to 3 atmospheres from the apex to the base.—*H. Cammerloher (translated).*

### WATER RELATIONS

8047. CHOLODNY, N. Zur Elektrophysiologie der Transpiration. [The electrophysiology of transpiration.] *Pflüger's Arch. Ges. Physiol. Menschen u. Tiere* 204: 386-395. 1924.—Experiments were performed principally on *Lupinus albus*, *Helianthus annuus*, and *Zea mays*. An increase or decrease in transpiration causes regular changes in potential in both leaves and roots. Young cells show much greater differences of potential than do old cells. These reactions can be entirely suppressed by narcotics or withdrawal of the food supply. Small variations in the potential of the root cells are probably caused by variations in the osmotic pressure of the surrounding fluid or by the passage of water from one cell to another.—*S. F. Cook.*

8048. [GAVRILOVA, L. G.] ГАВРИЛОВА, Л. Г. Влияние температуры на поступление воды через корни высших растений. [Influence of temperature on the absorption of water by the roots of the higher plants.] (French summary.) *Известия Главного Ботанического Сада Р.С.Ф.С.Р.* [Bull. Princip. Jard. Bot. République Russe] 22: 56-70. 1923.—The influence of temperature on water absorption by roots of the higher plants has been very little studied since the early work of Sachs, Vesque, and Kasaroff. Variations in the rate of such absorptions are without doubt due to certain physical changes in the permeability of the outer layer of protoplasm. In his experiments the author used entire plants, following the method of Vesque. The rate of absorption for a given temperature was measured by the movement

of the meniscus in a graduated capillary tube. By a series of preliminary experiments he determined the expansion of water in the apparatus and thus was able to eliminate possible errors. Use of this method permitted measurement of water absorption at varying temperatures without interruption of the experiment. The 1st series, using *Impatiens parviflora*, showed not only that the energy of absorption by roots varies with temperature but also that protoplasm exerts a regulatory activity. Rapid raising or lowering of temperature caused, during the first 10 minutes, a correspondingly rapid variation in permeability resembling a series of successive waves gradually disappearing. Then followed a period of reintegration in permeability corresponding to the given water temperature. The regulatory activity of protoplasm was shown also by the fact that the slow raising or lowering of temperature by 4–5°C. did not cause any variation in water absorption by the roots. Changes in absorption occurred only under much more rapid and considerable temperature variations—8–12° in these experiments. Furthermore, the variations in water absorption were not large enough to correspond exactly to the temperature variations.—These studies also demonstrated the existence of an optimum temperature for water absorption by roots; this is 36° for *I. parviflora*.—The investigations are being continued.—*Frederick V. Rand.*

8049. HUBER, BRUNO. Transpiration in verschiedener Stammhöhe. I. *Sequoia gigantea*. [Transpiration at different stem heights. I. *Sequoia gigantea*.] Zeitschr. Bot. 15: 465–501. 2 fig. 1923.—The transpiration of freshly cut twigs of *Sequoia gigantea* taken from various heights shows great differences. The transpiration of the lowest twigs is about 6 times that of the higher ones. An increase in transpiration occurs again at the tip of the tree. If the twigs are allowed to stand 24 hours in water the transpiration differences disappear. They are the result, therefore, of different water saturations. By mechanical or osmotic limiting of the water absorption similar differences in transpiration may be produced experimentally. However, a marked decrease in transpiration occurs only with living twigs. Dead twigs and non-living evaporation systems under similar conditions show only a slight decrease in evaporation. The transpiration differences are, therefore, not due to incipient drying but are due to stomatal action. The ash content of twigs from different heights varies directly with the transpiration but the decrease in ash content is less rapid than that of transpiration. The quotient, ash content: transpiration, becomes greater with decreasing transpiration.—*Author (translated).*

8050. HUBER, BRUNO. Beiträge zur Kenntnis der Wasserbewegung in der Pflanze. II. Die Strömungsgeschwindigkeit und die Größe der Widerstände in den Leitbahnen. [Water movement in plants. II. The speed of the transpiration stream, and resistance in the conducting vessels.] Ber. Deutsch. Bot. Ges. 42: 27–32. 1924.—As determined by measurements of transpiration and cross-sectional area, about 20 cc. of water per hour move through each sq. cm. of cross-sectional surface in 1–2 year old twigs of deciduous trees. In evergreen trees this figure is about 5 (2–10) cc. per hour. In both cases the amount determined is about  $\frac{1}{4}$  of the amount which filters through wood with a pressure difference of 1 atmosphere per m. of length, as found by Farmer. The resistance to the transpiration stream is, therefore, 0.2–0.3 atmospheres per m. of twig length. Since the measurements on absorptive power, by Ursprung and Blum, show values of this magnitude it is concluded that the force involved in water movement may be accounted for by the difference in absorptive power between the roots and leaves without the action of the cells of the stem.—*Author (translated).*

8051. KANGIESEK, FRIEDRICH. Ein Robinienwunder. [A Robinia wonder.] Mitteil. Deutsch. Dendrol. Ges. 32: 233. 1922.—During the unusual heat the last of July and the beginning of August 1921 it was noticed that the leaflets on a *Robinia* suddenly and visibly sank.—*J. C. Th. Uphof.*

8052. MONTFORT, C. Physiologische Grundlegung einer Guttationsmethode zur relativen Prüfung der Wasseraufnahme. [Physiological basis of a guttation method for testing water absorption.] Jahrb. Wiss. Bot. 59: 467–524. 1919.—There is a definite relation between the quantity of water absorbed in the root and the quantity exuded through guttation. In experiments on *Zea mays* the author shows that both hyper- and hypotonic solutions will cause guttation to cease and that the latter may afterwards be restored. The author discusses the results with reference to the question of "physiologically dry" soils.—*S. F. Cook.*

8053. SIERP, S., UND K. NOACK. Studien über die Physik der Transpiration. Jahrb.



Wiss. Bot. 60: 459-498. 1921.—The authors proceed on the assumption that the laws of evaporation from free surfaces are of importance in problems of transpiration. They use Stefan's formula:  $m = 4kr \log \frac{P-p_1}{P-p_2}$  where  $m$  is the amount evaporated in unit time,  $P$  is the air pressure, and  $p_1$  and  $p_2$  the vapor tension close to and at a distance from the moist surface. This formula holds when the air surrounding the moist surface is still. Experiments were made with air currents passing over moist surfaces at different velocities and the factor  $p_2$ , or the vapor pressure at a constant distance from the surface, was found to vary with the velocity of the wind. This variation could be compensated for by introducing a constant,  $a$ , based on the velocity. When the evaporation takes place through a porous surface the effect of variation in velocity of air current depends on the closeness of the pores. If the pores are 8-10 diameters apart the effect approaches that of an open fluid surface, but if they are close together they mutually interfere and complicate the result. The form of the leaf was found to be of no effect save in absolutely still air. When there is any air in motion the amount of evaporation is dependent only on the area of the surface. This also applies to the form of a tree or shrub.—*S. F. Cook.*

8054. WIEMANN, D. Sommerlicher Laubfall und herbstliche Neubelaubung. [Loss of foliage during summer and development of new foliage in autumn.] Mitteil. Deutsch. Dendrol. Ges. 32: 234-235. 1922.

### MINERAL NUTRIENTS AND SALT RELATIONS

8055. MCHARGUE, J. S. The occurrence of copper, manganese, zinc, nickel and cobalt in soils, plants, and animals and their possible functions as vital factors. Jour. Agric. Res. 30: 193-196. 1925.—Preliminary investigations show that virgin soils in Kentucky contain appreciable amounts of As, Cu, Mn, Zn, Co, Ni, Ba, and Sr. In plants and animals which have received their sustenance from the soil Cu, Mn, and Zn occur in sufficient amounts to permit of quantitative determinations by the new and more delicate methods of chemical analysis. The results show that the foliage and seed of plants contain considerable amounts of these elements and that their presence, though variable, appears to be constant. Moreover, Cu, Mn, and Zn occur in greatest concentration in the embryos and pericarps of corn, wheat and rice. The occurrence of these elements in greatest amount in those parts of cereals which contain important vital factors for the nutrition of animals is significant. Cu, Mn, and Zn occur in the tissues of domestic animals. The livers of young animals contain the largest amounts of these elements, although the blood and muscles contain appreciable amounts. The author is led to infer that colloidal organic complexes of these elements perform important biological functions in the metabolism of plants and animals.—*Author.*

8056. MEVINS, W. Beiträge zur Physiologie "Kalkfeindlicher" Gewächse. [Contributions to the physiology of the "calciphobous" plants.] Jahrb. Wiss. Bot. 60: 147-183. 1921.—The author's experiments show that in *Sphagnum rufescens*, *S. fimbriatum*, *S. imbricatum* and *S. quinquefarium* there is no specific toxic action with Ca, and deleterious effects are due solely to OH ions. Similarly, *Pinus pinaster* and *Sorothamnus scoparius* are affected only by the alkalinity. More serious damage is done by lack of Ca than by its excess.—*S. F. Cook.*

### METABOLISM (GENERAL)

8057. ALSBERG, C. L., AND E. E. PERRY. Further studies on the effect of fine grinding upon starch grains. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: lxvi. 1925.—Starch grains that have been battered by grinding in a pebble mill are still birefringent but do not show polarization crosses. Other properties of ground starches are discussed.—*G. B. Rigg.*

8058. EVANS, HERBERT M., AND GEORGE O. BURR. The anti-sterility vitamin, fat soluble. E. (Abstract.) Science 61: 519-520. 1925.

8059. FARNELL, R. G. Determination of the hydrogen-ion concentration of cane juices in Natal and Mauritius. Internat. Sugar Jour. 27: 89-90. 1925.—Although normal solutions of  $H_2SO_4$  and  $H_3PO_4$  require the same amount of alkali for neutralization and the total acidity of each is identical, yet under the same conditions of time and temperature the  $H_2SO_4$  inverts

about 10 times as much sucrose as does the  $H_3PO_4$ . The former is more dissociated into H-ions than is the latter and its H-ion concentration is higher. For sugar factory work the indicator, brom thymol blue, which has a range from slightly acid (pH 6) to slightly alkaline (pH 7.6), is very useful. A table is given showing the average of determinations of the pH of the different products in many factories of Natal and Mauritius. It is impossible to state definitely the best pH at which to work juices, since the nature of impurities in the juice in different countries varies. A good operator at the liming tanks, however, can keep the pH of the juice within narrow limits by noting the separation of the precipitate when the juice is poured into a small bottle. Buffer action of juices varies considerably and is much greater with raw than with clarified juice.—*Nellie E. Fealy*.

8060. FARNELL, R. G. W. The role of colloids in cane sugar manufacture. Internat. Sugar Jour. 27: 94-95. 1925.—Separation of colloids in cane juice and molasses can be readily effected by diffusion through a membrane of collodion, and in this way protein, pentosan, pectin, wax, tannin, and mineral matter can be isolated. Albumin is partly coagulated on heating to 80°-90°C., and it is more completely coagulated by heating at pH 5 than at pH 7.3. The same applies to the colloidal silica, which is precipitated only by first heating the raw juice to about 100°C. and then liming. Hot lime defecation would seem superior to the usual system both from the point of view of silica and albumin, but it seems difficult to combine hot defecation with sulphitation. If lime be added to the juice up to about pH 8.6 the pectin in the juice is precipitated in the form of calcium pectate. The pentosan does not seem to be removed by lime alone but in both sulphitation and carbonation is partially removed by adsorption on the granular precipitates of calcium sulphite and carbonate. Generally, sulphitation seems to remove more colloids than ordinary lime defecation, and carbonation removes a still greater quantity. The amount of colloids in different Trinidad, Natal, and Mauritius molasses is given in tabular form. Analyses made in Mauritius showed that over 80% of the colloids are removed during clarification.—*Nellie E. Fealy*.

8061. HESS, A. F., AND MILDRED WEINSTOCK. Antirachitic properties imparted to inert fluids and to green vegetables by ultra-violet irradiation. Jour. Biol. Chem. 62: 301-313. 1924.—Antirachitic properties were imparted to both plucked and growing vegetables by ultra-violet irradiation.—*G. B. Rigg*.

8062. IRVING, LAURENCE. The carbonic acid-carbonate equilibrium and other weak acids in sea water. Jour. Biol. Chem. 63: 767-778. 1925.—The large amount of  $CO_2$  in the ocean is significant to the fixation and use of energy by organisms. It occurs as  $H_2CO_3$ ,  $HCO_3^-$ , and  $CO_3^{--}$ , the quantities of each depending upon the pH and the excess base. Sea water contains other weak acids.—*G. B. Rigg*.

8063. JACOBS, W. A. Saponins. I. The sapogenin obtained from soapnuts. Jour. Biol. Chem. 63: 621-629. 1925.—The sapogenin obtained from soapnuts (probably *Sapindus saponaria* L.) is found to be identical with hederagenin from *Hedera helix*.—*G. B. Rigg*.

8064. JACOBS, W. A. Saponins. II. On the structure of hederagenin. Jour. Biol. Chem. 63: 631-640. 1925.

8065. JACOBS, W. A., AND A. M. COLLINS. Strophanthin. VI. The anhydrostrophanthindins and their behavior on hydrogenation. Jour. Biol. Chem. 63: 123-133. 1925.

8066. KOLTHOFF, I. M. A new set of buffer mixtures that can be prepared without the use of standardized acid or base. Jour. Biol. Chem. 63: 135-141. 1925.

8067. LING, ARTHUR ROBERT, AND DINSHAW RATTONJI NANJI. Studies on starch. Part II. The constitution of polymerised amylose, amylopectin, and their derivatives. Jour. Chem. Soc. [London] 127: 629-636. 2 fig. 1925.—In those starches which contain only amylose and amylopectin, the proportion was found to be 66.6% amylose and 33.3% amylopectin. All of the amylose in starch paste can be removed by digestion with barley diastase at 50°, the amylose being converted into maltose, and the amylopectin into alpha-beta-hexa-amylose. The hemicellulose, if any is present, is not digested and may be filtered off. Barley, wheat and rice starch contain hemicellulose in amounts varying from 8 to 18%.—*F. E. Denny*.

8068. LING, ARTHUR ROBERT, AND DINSHAW RATTONJI NANJI. Studies on starch. Part III. The nature and the genesis of the stable dextrin and of the maltodextrins. Jour. Chem. Soc. [London] 127: 636-651. 1925.



8069. LING, ARTHUR ROBERT, AND DINSHAW RATTONJI NANJI. Studies on starch. Part IV. The nature of the amylohemiacellulose constituent of certain starches. Jour. Chem. Soc. [London] 127: 652-656. 1925.—“Certain starches, notably those of barley, wheat, rice, etc., contain a substance of the nature of a hemicellulose,” designated by the authors as amylohemiacellulose. “It also appears to be present in leaves and stems and seems to be one of the principal constituents of the cell walls of such plants. . . .” It was also found in different woody tissues, and, since the main portion of the hemicellulose gives a blue color with iodine, it might be confused with starch. This hemicellulose contains silica as an ester compound with the polysaccharide. The importance of silica in plant metabolism is emphasized. The diastase of germinated barley (malt) hydrolyzes amylo-hemicellulose, but the diastase of ungerminated barley does not.—*F. E. Denny.*

8070. MAIGE, A. Alimentation hydrocarbonée de la cellule et variations nucléaires et et plastidiales. [Hydrocarbon nutrition of the cell and nuclear and plastid variations.] Cellule 35: 327-340. 1925.—The hypocotyls of *Phaseolus vulgaris* var. Lingot, were subjected to the action of a variety of hydrocarbons. The production of reserve starch in the plastids or an increase in the mass of the nucleus or nucleole was used as a criterion of assimilation. For the bean which forms starch easily the former is more easily used as a standard of assimilation than the latter. Saccharose, maltose, glucose, levulose, galactose, mannose and glycerin were assimilated. The method is more rapid than the ordinary methods of physiology and permits a study of the modifications immediately produced in the cell by the penetration of the organic substances.—*J. Chifflet (translated).*

8071. SIDERIS, CHRISTOS P. Studies on the behavior of *Fusarium cromyophthoron* in carbohydrates, glucosides, proteins and various decoctions, with a discussion on the “isometabolic point” of substances. Phytopathology 15: 129-145. 1925.—When *Fusarium cromyophthoron* was grown in culture media of varying H-ion concentration the final reaction of the media was changed by the metabolic products of the fungous growth toward a more or less definite end point which varied with the source of carbon in the medium. In an inorganic medium plus glucose the H-ion concentration increased when the initial pH was 4.0, 5.0, 6.0, 7.0, and 8.0 but decreased when the initial pH was 3.0, the final reaction pointing toward pH 3.8. In the same basic medium plus beef broth with an initial pH of 8.0 the H-ion concentration increased, while with initial concentrations of pH 7.0, 6.0, 5.0, 4.0, and 3.0 it decreased, the final reaction pointing toward pH 7.4. When the cultures were started with the initial reaction of the medium adjusted to the end point for that particular medium little change was produced in the reaction by the growth of the fungus. For this point, the point at which the H-ions and the OH-ions of the metabolic products are equal, the name “isometabolic point” is suggested.—*B. B. Higgins.*

8072. WIDMARK, E. Der Zusammenhang zwischen der Bildung des A-Vitamins und den Farbstoffen der Pflanzen. [Connection between the A-vitamin and the colors of plants.] Skandinavisches Arch. Physiol. 45: 7-11. 1924.—A connection between the presence of chlorophyll and the A-vitamin is shown by the fact that genetically chlorotic plants do not form vitamin A even when placed in strong light.—*S. F. Cook.*

8073. WISSELINGH, C. VAN. Die Zellmembran. [The cell wall.] In: Handbuch der Pflanzenanatomie. Edited by K. LINSBAUER. 1 Abt., 1 Teil. Cytologie. Bd. III-2. viii + 264 p. 73 fig. Borntraeger: Berlin, 1924.—(For abstract, see this issue, Entry 7646.)

#### METABOLISM (NITROGEN RELATIONS)

8074. COHN, E. J. Physiochemical methods of characterizing proteins. VII. The molecular weights of the proteins. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: xv. 1925.

8075. DILL, D. B., AND C. L. ALSBERG. A modification of the method of preparing gliadin. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: lxvii. 1925.

8076. JOHNSON, T. B., AND R. D. COGHILL. The distribution of nitrogen in the protein fraction of tubercle bacilli after removal of tuberalinic acid. Jour. Biol. Chem. 63: 225-231. 1925.—Analysis reveals a very close relation between the protein of the tubercle bacilli and the proteins isolated by Chibnall from the cytoplasm of the leaves of spinach, alfalfa, and ensilage corn.—*G. B. Rigg.*

8077. JONES, D. B., AND C. E. F. GERSDORFF. Proteins of the bark of the common locust tree, *Robinia pseudacacia*, Linn. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: xliv. 1925.—There have been isolated from this bark 2.52% of albumin, 1.38% of a globulin and a quantity of a substance having the properties of a protease.—G. B. Rigg.

8078. JONES, W., AND M. E. PERKINS. The occurrence of plant nucleotides in animal tissues. Jour. Biol. Chem. 62: 291-300. 1924.

8079. JONES, W., AND M. E. PERKINS. The nitrogenous groups of plant nucleic acid. Jour. Biol. Chem. 62: 557-564. 1925.

8080. LEVENE, P. A., AND I. P. ROLF. Plant Phosphatides. I. Lecithin and cephalin of the soy bean. Jour. Biol. Chem. 62: 759-766. 1925.—Starting with a commercial lecithin obtained from soy-beans, lecithin was obtained free from cephalin. So far as determined the principal distinguishing characters of soy-bean lecithin are: the low proportion of saturated fatty acids, the absence of unsaturated fatty acid containing a longer chain than  $C_{18}$ , and the presence of linolenic acid. Soy-bean lecithin contains the same 2 saturated fatty acids, stearic and palmitic, which occur in the lecithin of animal origin. The work of Maclean, which reviews the work on phosphatides up to 1918, is cited.—G. B. Rigg.

8081. SMITH, A. H. A protein in the edible portion of the orange. Preliminary paper. Jour. Biol. Chem. 63: 71-73. 1925.—A protein was found in the pulp of the orange, which is distinguished from any of the conventional classes of proteins by its unusual solubilities. It is soluble in weak alkali, but insoluble in water, neutral salt solution, or weak acids. Although closely associated with the pigment of the fruit the protein is apparently not in chemical combination with it.—G. B. Rigg.

8082. VICKERY, H. B., AND C. S. LEAVENWORTH. Some nitrogenous constituents of the juice of the alfalfa plant. III. Adenine in alfalfa. Jour. Biol. Chem. 63: 579-583. 1925.—Adenine nitrogen in amounts corresponding to 0.012% of the fresh plant and 0.066% of the dry weight was found in the alfalfa plant.—G. B. Rigg.

8083. WAKSMAN, S. A., AND S. LOMANITZ. Contribution to the chemistry of decomposition of proteins and amino acids by various groups of micro-organisms. Jour. Agric. Res. 30: 263-281. 1 fig. 1925.—A study has been made of the nature of decomposition of certain pure amino acids and casein by 2 fungi, 2 bacteria, and 1 Actinomyces. Casein was used in a synthetic medium as a source of N alone and of N and C. The reactions taking place were followed by measuring the residual amino N formed from decomposition of casein, formation and accumulation of  $NH_3$ , amount of growth produced by the organisms, and disappearance of dextrose in the medium, wherever it had been used. The results indicate that not all organisms attack proteins and amino acids alike. The 2 fungi, *Trichoderma koningi* and *Zygorhynchus molleri*, utilized the various amino acids and the protein both as sources of C and N, the amount of growth and  $NH_3$  accumulation depending, however, in the absence of available carbohydrates, upon the available C in the amino acid molecule. A definite relation was found to exist between the C (available) content of the amino acid molecule and the amount of  $NH_3$  accumulating. The 2 bacteria tested, *B. cereus* and *Bact. fluorescens*, behaved differently. The first was unable to attack glycocoll, alanin, and phenylalanin, while glutamic acid and asparagin were acted upon to a limited extent, and casein and other native proteins were decomposed very rapidly. *Bacterium fluorescens* was unable to decompose casein, but acted very readily upon the various amino acids used. By combining the 2 organisms in casein media, the protein was decomposed very rapidly to  $NH_3$ , *B. cereus* hydrolyzing the casein chiefly to protein derivatives and *Bact. fluorescens* decomposing the latter to  $NH_3$ . Ammonia accumulation cannot be used as an index of the proteolytic activities of microorganisms, when the C content of the medium is not considered. An organism may decompose a much larger amount of protein in the presence of an available carbohydrate, but produce a much smaller amount of  $NH_3$ . Ammonia formation by microorganisms from amino acids depends upon the C:N ratio of the compound, as well as upon the nature of the organism, as influenced by its utilization of energy.—Author.



## METABOLISM (ENZYMES, FERMENTATION)

8084. BALLS, A. K., AND J. B. BROWN. Studies in yeast metabolism. I. Jour. Biol. Chem. 62: 789-821. 1925.

8085. SUMNER, J. B., AND V. A. GRAHAM. The purification of jack bean urease. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: xliii. 1925.

## METABOLISM (RESPIRATION, AERATION)

8086. BROWN, J. B., AND A. K. BALLS. Studies in yeast metabolism. II. Carbon dioxide and alcohol. Jour. Biol. Chem. 62: 823-836. 1925.

8087. CLARK, W. M., B. COHEN, AND H. D. GIBBS. An interpretation of the biological reduction of methylene blue. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: liv. 1925.—Equilibrium values for the reversible reduction of methylene blue are established.—G. B. Rigg.

8088. KOSTYSCHEW, S., AND M. AFANASSJAWA. Die Verarbeitung verschiedener organischer Verbindungen durch Schimmelpilze bei Sauerstoffmangel. [The anaerobic formation of various organic compounds by molds.] Jahrb. Wiss. Bot. 60: 628-650. 1921.—Cultures of *Aspergillus niger* on tartaric acid, lactic acid, glycerin, mannite, and quinic acid always contain zymase and produce ethyl alcohol in the absence of oxygen, when the solution is neutral. An acid solution inhibits the formation of alcohol. Peptone cultures contain no zymase and produce no alcohol. In sugar cultures without O<sub>2</sub>, much sugar is used up but little alcohol is produced. The same is true of *Penicillium glaucum* which produces even less alcohol than *Aspergillus*.—S. F. Cook.

8089. NOACK, K. Der Betriebstoffwechsel der thermophilen Pilze. [The metabolism of the thermophilous fungi.] Jahrb. Wiss. Bot. 59: 413-466. 1919.—Most of the experiments were performed on *Thermoascus aurantiacus* Miede, with some work on *Anixia spadicea*, *Mucor pusillus*, *Thermoideum sulfureum*, and *Thermomyces lanuginosus*. Two methods for determination of respiration were used: Pettenkofer's method of precipitation of CO<sub>2</sub> with Ba(OH)<sub>2</sub>, and Hempel's method of gas analysis. The more rapidly growing fungi gave the following values for carbon dioxide produced per day: *Thermomyces aurantiacus* 310% of the dry weight, *Mucor pusillus* 226%, and *Anixia spadicea* 114%. The respiration of the slow growing forms is much less. The respiratory quotient CO<sub>2</sub>:O<sub>2</sub> of all these fungi is from 1 to 1.09. The temperature coefficient in the optimal range (about 45°C.) is 1.6-1.9, somewhat lower than that of the non-thermophilous fungi. Furthermore, the absolute amount of CO<sub>2</sub> produced by *Thermoascus* (310% of the dry weight) is less than that which would be produced by *Penicillium* were the latter able to respire normally at 45°C. The respiratory quotient is unaffected by the temperature. In a medium of pure glucose it is found that 55% of the sugar used is converted into cell material and the rest is burned in respiration. These figures are similar to those obtained with ordinary fungi. On lowering the temperature below the minimum, the respiration ceases after 24 hours while the fungus does not die for 24 days. When the fungus is exposed to a low temperature and returned to the optimum it is found that the rate of respiration is permanently lowered, the amount being proportional to the temperature and length of exposure. When the materials or concentrations in the nutrient medium are suddenly changed there is a very quick response in the rate of respiration. The effect of ZnSO<sub>4</sub>, however, is relatively slow, there being no effect for several hours. Complete removal of O<sub>2</sub> can be endured by *Thermoascus* for about 8 days, during which time the growth ceases entirely and the respiration is much reduced. When O<sub>2</sub> is again furnished, the respiratory quotient increases greatly. The author considers this to be due to a burning of intermediate oxidation products formed during the period of anaerobiosis.—S. F. Cook.

8090. NOVY, F. G., AND M. H. SOULE. Cell respiration. (Abstract.) Science 61: 519. 1925.

## ORGANISM AS A WHOLE

8091. HARDER, R. Kritische Versuche zu Blackmans Theorie der "begrenzenden Faktoren" bei der Kohlensäureassimilation. [Critical experiments regarding Blackman's theory of "limiting factors" with CO<sub>2</sub> assimilation.] Jahrb. Wiss. Bot. 60: 531-571. 1921.—Investigations on the effect of light intensity and CO<sub>2</sub> concentration on the rate of assimilation of

submerged water plants such as *Fontinalis antipyretica* lead the author to the conclusion that Blackman's theory, at least for these 2 factors, is incorrect and photosynthesis is not one of the processes which follow the law of the minimum. This is shown by the following facts: (1) The curves of assimilation never show a point of inflection when one of the factors is increased and (2) with every combination of light intensity and CO<sub>2</sub> concentration, contrary to Blackman, the speed of assimilation is increased with increase of each of the 2 factors.

—S. F. Cook.

8092. HOLDT, F. VON. Ueber die weissblaue Bereifung. [The development of the whitish-blue color.] Mitteil. Deutsch. Dendrol. Ges. 31: 115-116. 1921.—Conifers bearing blue needles at a later age have green needles when very young. Even the finest *Picea pungens argentea* is green in its youth. During the 4th to 6th year the bluish color develops.—J. C. Th. Uphof.

8093. KOKETSU, RIICHIRO. Über den Gehalt an Trockensubstanz und Asche in einen bestimmten Volumen Gewebepulver als Indizium für den Gehalt des Pflanzenkörpers an denselben Konstituenten. [The dry material and ash content in a given volume of powdered tissue as an indication of the content of the same constituents in a plant body.] Jour. Dept. Agric. Kyushu Imp. Univ. 1: 151-162. 1924.—The author questions the accuracy of the methods now used to express the dry weight and the ash content of a plant. He proposes the use of a new method in which a given volume (1 cm<sup>3</sup>) of the powdered tissue is used as a basis for the determinations. A number of experiments are reported to show the comparative results of the different methods: Dry weight and ash content are expressed in terms of (1) percentage of fresh weight; (2) absolute value in 1 cm<sup>2</sup> of tissues; (3) absolute value in 1 cm<sup>3</sup> of tissue; and (4) absolute value in 1 cm<sup>3</sup> of the powdered tissue. The author believes these results indicate that the powdered-tissue method has advantages over the other methods, and is especially applicable in those cases where the tissues under investigation deviate widely in their material composition.—P. D. Strausbaugh.

8094. WALTER, HEINRICH. Theoretische Betrachtungen über die Beziehungen der Mitscherlich'schen Produktionskurve und des Weber-Fechnerschen Gesetzes zum Massenwirkungsgesetz. [Theoretical considerations on the relations of the Mitscherlich production curve and the Weber-Fechner law to the law of mass action.] Naturwissenschaften 12: 25-33. Fig. 1-4. 1924.—The discussion brings out that both Mitscherlich's production curve and the Weber-Fechner law may be brought under the law of mass action.—Orton L. Clark.

## GROWTH, REPRODUCTION

8095. KARLING, JOHN S. A preliminary account of the influence of light and temperature on growth and reproduction in *Chara fragilis*. Bull. Torrey Bot. Club 51: 469-488. Pl. 11-13. 1924.—Cultures of *Chara fragilis* were subjected to artificial illumination and daylight in varying amount and were found to be in "a considerable degree photoperiodic" so far as sexual reproduction is concerned. "A few hours of artificial illumination in addition to the daylight is sufficient to induce the development of antheridia and oogonia in mid- and later winter, whereas in nature *C. fragilis* fruits only from June to September." Under the conditions studied, temperature is apparently a secondary factor. Artificial illumination had quite a decided effect on the form of the plants, producing elongated internodes, reduced branching, etiolation, and spindling in general.—P. A. Munz.

## MOVEMENTS

8096. GRADMANN, H. Die Überkrümmungsbewegungen der Ranken. [The bending motions of tendrils.] Jahrb. Wiss. Bot. 60: 411-457. 1921.—Most of the experiments were made with tendrils of *Scyos angulatus* although many other species are mentioned in the discussion of the literature. The simple tropic motions are pendular, elliptical, or circular. In the pendular the motion extends to points equidistant from the central axis, and the elliptical and circular motions rotate around a fixed central axis. The motions are caused primarily by unequal growth, one side growing faster than the other. The autotropic motions are modified by the normal geotropism of the growing point, in a manner depending on the



position of the shoot. This indicates a similarity in the course of reaction in the 2 types of tropism.—*S. F. Cook.*

8097. NOACK, K. Über Orientierungsbewegungen Schaublütensiele in der Gattung *Hydrangea*. [The orienting motions of the flower stems of *Hydrangea*.] *Jahrb. Wiss. Bot.* 60: 135-146. 1921.—*Hydrangea paniculata* var. *grandiflora* was studied. The stems of the showy flowers in the flowering season are negatively geotropic. Toward the end of July they change and react positively. This alters the position of the flower. At the same time there is a change in the color of the flower from pure white to red. The author considers that the change in tropism and color are causally related.—*S. F. Cook.*

8098. PRINGSHEIM, E. G. Die Reinkultur von *Leptobryum piriforme*. [Pure culture of *Leptobryum piriforme*.] *Jahrb. Wiss. Bot.* 60: 499-530. 1921.—*Leptobryum* was obtained from a culture of miscellaneous algae which was heated on a water bath to a temperature of 60°C. for 15-20 minutes. The cultures thus obtained were free from fungi and algae but contained a few bacteria. These were removed by allowing the protonema to grow through agar, thus rubbing off the bacteria. Pure cultures of the protonema thrived in a water culture containing  $\text{NO}_3$  or  $\text{NO}_2$  as a source of N. The sporophytes from the protonema grew best in a slightly alkaline medium although the latter prefers a weakly acid solution. The sporophytes grew under the surface of the liquid as well as in the air. The protonema did not grow in the dark. It showed strong resistance to chemical and osmotic influences, bacteria, and fungi. It was, as were also the leafy shoots, strongly positively geotropic whether grown on water, in air, or in agar. The spores from the cultures were not so resistant to heat as were wild spores but they endured dryness very well.—*S. F. Cook.*

8099. SCHWERIN, FRITZ VON. Versuch einer Erklärung merkwürdiger Pflanzenbewegungen. [Attempt to explain remarkable plant movements.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 160-167. 1 pl. 1919.—A description is given of a spiral growth of the wood elements of some stems. This causes a screw like appearance over the entire bark of the stem. This growth may be directed, as in climbers, toward the right or the left. The writer suggests that this type of growth bears a relation to gravitation.—*J. C. Th. Uphof.*

8100. STARK, P. Studien über traumatotrope und haptotrope Reizleitungsvorgänge mit besonderer Berücksichtigung der Reizübertragung auf fremde Arten und Gattungen. [Studies on the traumatotropic and haptotropic transmission of stimulus with special reference to the relations between different species and genera.] *Jahrb. Wiss. Bot.* 60: 67-134. 1921.—The author used Paal's method whereby the coleoptile of a certain grain is cut transversely. The severed point is then replaced on the base and the possibility of the transmission of stimulus through the cut surface is studied. Experiments are reported using the same coleoptile, the tip of one individual and the stump of another, the tip of one species and the stump of another, etc. *Avena sativa* was principally used, although experiments were also performed on the following members of the family: *Avena orientale*, *A. nuda*, *A. strigosum*, *Hordeum hexastichum*, *Triticum dicoccum*, *T. aurum*, *T. monococcum*, *T. polonicum*, *T. spelta*, *T. turgidum*, *T. vulgare*, *Secale cereale*, *Panicum*, *Sorghum*, *Zea*, *Bromus*, *Lolium*, etc. In conjunction with these, other plants, too numerous for individual mention, were used. Traumatotropic and thigmotropic stimulation can pass from the coleoptile tip across the cut surface into the base and cause the bending response. It is not necessary for the tip to be placed in any particular position relative to the base nor must the vessels coincide. Such a transmission of stimulus occurs when the tip is placed on the base belonging to a different individual, species, or genus, although the magnitude of the response decreases with the systematic difference between the 2 individuals. This effect is not reduced if the tip or the base be killed by boiling. Extracts of the injured coleoptiles can also cause the response. When these extracts are placed on the side of the coleoptile the tropic response is positive. The author concludes that the transmission of the stimulus is due to the diffusion of definite excitatory substances which differ with every species.—*S. F. Cook.*

#### RADIANT ENERGY RELATIONS

8101. MORRISON, T. F. The effect of polarized light on the growth of luminous bacteria. *Science* 61: 392-393. 1925.—With all other factors such as temperature and light intensity

carefully controlled, it has been shown that polarized light hastens the growth of the luminous bacteria of the species *Photobacterium phosphorescens*. The time required for bacteria so treated to reach the point of maximum intensity of luminescence is about  $\frac{1}{2}$  that of untreated bacteria.—C. J. Lyon.

### TOXIC AGENTS

8102. LOONEY, J. M., AND D. I. MACHT. The relation between the undetermined nitrogen of the blood and its toxicity to *Lupinus albus* seedlings. (Abstract.) Jour. Biol. Chem. 63 [Proc.]: lx. 1925.

8103. SCARTH, G. W. The toxic action of distilled water and its antagonism by cations. Proc. Trans. Roy. Soc. Canada III. 18<sup>6</sup>: 97-104. 1924.—Distilled water exposed to air but freed from all traces of metal ions by condensation in silica is rapidly toxic to well washed *Spirogyra*. When, as normally happens, the pH due to dissolved CO<sub>2</sub> is 5.5, the duration of life of the cells may be only a few hours. When the pH is raised to 7.1 by exclusion of CO<sub>2</sub> the cells may live for more than a week. Toxicity varies inversely with the H-ion concentration and the mode of injury is in appearance identical with that induced by acids in general. —Single salts antagonize this toxic effect according to the valency of their cations, as measured by the degree of dilution to which the antagonistic effect extends. In the case of the monovalent (alkali) cations the limit is 10<sup>-3</sup> to 10<sup>-4</sup> M, efficiency increasing with atomic weight of divalent cations (Ba, Sr, Ca, Cd, Zn, Mn, Pb, Co, Fe, Mg) it is 10<sup>-6</sup> M; of trivalent cations (Y, Ce, Pr, Nd, Sa, Er) it is 10<sup>-7</sup> M or even lower.—Duration of life increases with concentration until limited by the toxicity of the cation itself. This latter factor determines the extent of maximum viability and the concentration at which it shall occur. In the case of the alkali group, toxicity decreases; in other chemical groups it increases with atomic weight. Thus, the maximum duration of life (expressed in hours) of *Spirogyra dubia* in chlorides of the various metals is as follows: Cs 120, Rb 36, K 8, Na 7, Li 6, all at  $\frac{M}{200}$  (distilled water 5 hours); Ca 528 in 10<sup>-2</sup> M, Sr 360 in 10<sup>-2</sup> M, Ba 36 in 10<sup>-5</sup> M (distilled water 10 hours); Zn 168 in 10<sup>-4</sup> M, Cd 14 in 10<sup>-4</sup> M (distilled water 8 hours); Y 72 in 10<sup>-6</sup> M, Ce 42 in 10<sup>-7</sup> M (distilled water 10-12 hours) and Y 360 in 10<sup>-5</sup> to 10<sup>-6</sup> M, Ce 50 in 10<sup>-6</sup> M (distilled water 20 hours). Only the noble metals are so toxic as to show no antagonism at any concentration. —Author.

### PHYSIOLOGY OF DISEASE

8104. CAPPELLETTI, CARLO. Reazioni immunitarie nei tubercoli radicali di Leguminose. [Immunization reactions in the root-tubercles of the Leguminosae.] Ann. Bot. 16: 171-186. 1924.—The presence of agglutinins in the tubercles of *Lathyrus odoratus*, *Pisum sativum* and *Vicia faba* was demonstrated on adding the juice squeezed from the tubercles to a suspension of *Bacillus radicumicola* Beij. isolated from similar tubercles. The effective dilutions of the juice were from 1:30 to 1:60, the reaction developing after 12 to 30 hours at room temperature. Both living and dead bacteria were used with identical results. There was no self-agglutination of the bacterial cultures and no precipitates were formed in the tubercle juice even after 48 hours. The agglutinating properties of the juice are destroyed by heating to 80°C. for 30 minutes. The agglutinability of the bacteria is not reduced by the presence of capsules. The tubercle agglutinins were specific. They appear in the tubercles at the time of the formation of the flower buds of the host, reach a maximum with the unfolding of the flowers and decline rapidly with the development of the ovaries. A degeneration of the tubercle is observed at this time. By deflowering, the author was able to prolong the presence of agglutinins in the tubercles, but no maximum was reached under these circumstances. The agglutinins were found localized in the tubercles. Young and old roots, stems and leaves gave negative results. A special technic is given for demonstrating the presence of capsules in *B. radicumicola*.—P. D. Caldis.



## TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*E. B. PAYSON, *Assistant Editor*

(See also in this issue Entries 7616, 7617, 7625, 7626, 7737, 7754, 7765, 7767, 7873, 7924, 8092.)

## GENERAL

8105. PARKIN, JOHN. The strobilus theory of angiosperms. (Abstract.) Proc. Linn Soc. London 135: 51-66. Pl. 1. 1923.

8106. SCHWERIN, FRITZ VON. Im Volksmunde veränderte Pflanzennamen. [Plant names changed by the language of the people.] Mitteil. Deutsch. Dendrol. Ges. 32: 67-73. 1922.—A list is given of German plant names, showing their origin from related names.—J. C. Th. Uphof.

8107. SURINGAR, VALCKENIER. Die Nomenklatur der Amerikanische Praktiker. [Nomenclature of American horticulturists.] Mitteil. Deutsch. Dendrol. Ges. 34: 311-323. 1924.—The writer compares the nomenclature followed by Bailey's Standard Cyclopedia of Horticulture, and Standardized Plant Names, with some of the European views.—J. C. Th. Uphof.

## PTERIDOPHYTES

8108. HERTER, W. Un nuevo helecho del Uruguay. [A new fern from Uruguay.] Darwiniana 1: 159-161. 1 pl. 1924.—*Gymnogramme Felipponei* is described and illustrated as a new species.—C. M. Hicken.

## SPERMATOPHYTES

8109. AMES, OAKES. Enumeration of Philippine Apostasiaceae and Orchidaceae. [In: MERRILL, E. D. An enumeration of Philippine flowering plants. I. 252-369. 1924; Ibid. 370-463. 1925.] Bur. Sci. Publ. [Philippine Is.] 18.—The author gives the accepted scientific names, synonyms, bibliography, distribution notes, and the citation of a limited number of exsiccatae. Two species of the Apostasiaceae and about 825 species, numerous varieties and forms of Orchidaceae are recognized in the present enumeration. The following new combinations and new names are included: *Epipactis luzonensis* (*Goodyera luzonensis* Ames), *Acoridium Hutchinsonianum* (*Dendrochilum Hutchinsonianum* Ames), *Malaxis acuminata* D. Don var. *biloba* (*Microstylis biloba* Lindl.), *Eria ramosa* (*E. vagans* Ames, not Schltr.), *Bulbophyllum Loherianum* (*Cirrhopetalum Loherianum* Kränzl.), *Pomatocalpa vitellinum* (*Cleisostoma vitellinum* Reichb. f.), *Trichoglottis rosea* (*C. rosea* Lindl.), and *Staurochilus luzonensis* (*Trichoglottis luzonensis* Ames).—J. M. Greenman.

8110. BLAKE, S. F. New South American Verbesinas. Bull. Torrey Bot. Club 51: 421-436. 1924.—*Verbesina macrophylla* (Cass.) Blake is made as a new combination and the following are described as new species: *V. Macbridei*, *V. malacophylla*, *V. saubinetioides*, *V. hastifolia*, *V. grandis*, *V. grandifolia*, *V. altipetens*, *V. nudipes*, *V. pterophora*, *V. crassicaulis*, *V. minuticeps*, *V. brachypoda*, and *V. pentantha*. Of the new species named the first 6 are from Peru, the next 4 from Colombia, and the last 3 from Ecuador.—P. A. Munz.

8111. BYHOUWER, J. T. P. × *Berberis Irwinii* (nov. hybr.) Byhouwer. Mitteil. Deutsch. Dendrol. Ges. 33: 253. 1923.—*Berberis Irwinii* is described as a new hybrid. It is a seedling of *B. stenophylla* Lindl. During recent years it has been grown in some gardens in Holland where it is hardy.—J. C. Th. Uphof.

8112. CAMUS, A. Espèces nouvelles d'Arundinaria malgaches. [New species of Arundinaria.] Bull. Mus. Hist. Nat. [Paris] 30: 394-396. 1924.—*Arundinaria madagascariensis* and *A. Perrieri*, n. spp. from Madagascar, are described.—John M. Fogg, Jr.

8113. CHOUX, P. Sur quelques Asclépiadacées-Sécamonées malgaches de l'Herbier du Muséum National d'Histoire naturelle de Paris. [Asclepiadaceae from Madagascar.] Bull. Mus. Hist. Nat. [Paris] 30: 397-401. 1924.—Fourteen species of *Secamone*, one of *Secamonopsis*, and one of *Toxocarpus* are reported from Madagascar and are discussed by the author. *Secamone Cloiselii* and *S. uncinata* are described as new species.—John M. Fogg, Jr.

8114. DANSER, B. H. *De Nederlandsche Rumex Bastaarden*. [The *Rumex* hybrids of the Netherlands.] *Nederland. Kruidk. Arch.* 1923: 232-270. 2 pl. 1924.—A critical study is presented of the morphology and localities of *Rumex abortivus* (*conglomeratus* × *obtusifolius*), *R. Duftii* (*obtusifolius* × *sanguineus*), *R. Steinii* (*obtusifolius* × *paluster*), *R. callianthemus* (*maritimus* × *obtusifolius*), and *R. Henrardii* (*maritimus* × *paluster*). A chapter is devoted to the nomenclature of hybrids in general. It is difficult to bring unity into the nomenclature of a group of plants, even if the rules of nomenclature are closely followed. There are not many rules as to hybrids; various authors have very different views. The boundaries of *Rumex* are not difficult to observe, since *Emex* and *Oxyria* are separated from this genus. The writer asks whether it is advisable to split the genus into the following genera: *Lapathum*, *Acetosa*, *Acetosella*, and *Platypodium*. The plates give a schematic presentation of the hybrid forms in the Netherlands.—J. C. Th. Uphof.

8115. DAVIDSON, A. *Allium grandisceptrum* n. sp. *Bull. Southern California Acad. Sci.* 23: 126. 1924.—This new species from Humboldt County, California, is compared by the author with *A. bisceptrum*.—L. R. Abrams.

8116. DAVIDSON, A. *Calochortus lanternus* n. sp. *Bull. Southern California Acad. Sci.* 23: 126. 1924.—This new species is from the San Gabriel Mountains, and is said to be related to *C. albus* Dougl.—L. R. Abrams.

8117. DAVIDSON, A. *Eriogonum crocatum* n. sp. *Bull. Southern California Acad. Sci.* 23: 17. Pl. E. 1924.—This is a new perennial species which the author compares with *E. umbellatum* Torr. It is from Conejo grade, Ventura County, California.—L. R. Abrams.

8118. DAVIDSON, A. *Lilium Parryi* var. *Kessleri*. *Bull. Southern California Acad. Sci.* 23: 53-54. Pl. M. 1924.—This new variety is from the San Gabriel Mountains, California. It differs only in foliage.—L. R. Abrams.

8119. DAVIDSON, A. *New California plants*. *Bull. Southern California Acad. Sci.* 22: 70-74. Pl. 16-20. 1923.—The author describes the following new species: *Gilia lineata*, *G. truncata*, *Hasseanthus Kessleri*, and *Allium Bullardi*; a revised description of *Dudleya parva* Rose & Davidson also is given. All the species are illustrated.—L. R. Abrams.

8120. DAVIDSON, A. *New plants from S. California*. *Bull. Southern California Acad. Sci.* 22: 5. Pl. 6. 1923.—Two new species are described: *Aster Standleyi* Davidson and *Dudleya parva* Rose & Davidson.—L. R. Abrams.

8121. DAVIDSON, A. *Zygadenus diegoensis* n. sp. *Bull. Southern California Acad. Sci.* 23: 105. 1924.—A new species from the Palomar Mountains, San Diego County, California, is described and compared by the author with *Z. venenosus* Wats.—L. R. Abrams.

8122. DE BEAUFORT, L. F., A. A. PULLE, ET L. RUTTEN. *Nova Guinea. Résultats des expéditions scientifiques à la Nouvelle Guinée. Botanique*. [New Guinea. Results of the scientific expeditions to New Guinea. Botany.] Vol. 14. 172 p. 18 pl. E. J. Brill: Leyden, 1924.—Part 1 of Vol. XIV forms the continuation of Vol. XII of "Nova Guinea" of which volume the last part was issued in 1917. The present part contains the following groups and families: Pteridophyta by C. R. W. K. VAN ALDERWERELT VAN ROSENBURGH, Fagaceae by J. SCHUSTER, Proteaceae, Magnoliaceae, Menispermaceae, Dilleniaceae and Myrtaceae by L. DIELS, Anacardiaceae by W. SLIS, Loranthaceae by K. KRAUSE, Halorrhagaceae, Rhamnaceae, Linaceae, Primulaceae, and Iridaceae by F. W. WENT, Loganiaceae by N. CAMMERLOHER, Urticaceae by H. WINKLER, Burseraceae, Vitaceae and Rutaceae by C. LAUTERBACH, Saxifragaceae, Cunoniaceae and Elaeocarpaceae by O. CHR. SCHMIDT, Malvaceae by B. P. G. HOCHREUTNER, and Verbenaceae by R. C. BAKHUIZEN VAN DEN BRINK and H. J. LAM. The following genera, species and varieties are new to science and are partly illustrated by photographs of specimens or by drawings: *Alsophila melanocaulos*, *A. scaberulipes* and var. *ciliolata*, *A. aeneifolia* and var. *subglauca*, *Angiopteris crinita* var. *intramarginalis*, *Arthropteris dolichopoda*, *Aspidium pleocnemoides*, *A. teratocarpum*, *A. vastum* f. *typicum* and f. *latius*, *Asplenium pseudovolcanicum*, *A. laxifolium*, *Cyathea imbricata*, *C. perpelvigera*, *Dennstaedtia erythrorachis* var. *aculeolata*, *Diplazium opacifolium*, *Drynaria amphilogos*, *Dryopteris quadriquetra*, *D. stereophylla*, *D. oligolepia*, *D. rigidifolia*, *D. pseudoparasitica*, *D. schizophylla*, *D. repandula*, *D. urophylla* var. *peraspera*, *D. cyclosorus*, *Elaphoglossum sclerophyllum*, *Gleichenia vulcanica* var. *plumosa*, *G. subulata*, *G. ornamentalis* var. *lanuginosa*, *G. pseudoscandens*, *Grammatopteridium*, n. name, *G. pseudodrymoglossum*, *Histiopteris estipulata*, *Hymenophyl-*



*lum ellipticosorum*, *H. nutantifolium*, *H. firmum*, *H. subfirmum*, *Lindsaya rhombifoliolata*, *L. sinuato-crenata*, *L. decomposita* f. *longipinnula*, *L. davallioides* f. *parallelogrammoides*, *Lomaria acutiuscula*, *L. revoluta*, *Marattia rigida*, *Nephrolepis humatoides*, *Paesia Lamiana*, *Plagiogyria novoguineensis*, *Pleopeltis pampolycarpa*, *P. gracilipes*, *P. linearis* var. *obtusiuscula*, *P. obolophylla*, *P. megalosoroides*, *P. cretifera*, *Polypodium reductum*, *P. viridulum*, *P. trichocarpum* and f. *inermis*, *P. loculosum*, *P. mesocarpum*, *P. ciliolatum*, *P. inconstans*, *P. coredrosorum*, *P. sclerophyllum*, *P. gracillimum* var. *multisorum*, *P. abeaium*, *P. rachisorum* f. *puberulum*, *P. vernicosum*, *P. subulatipinnum*, *P. congregatifolium*, *P. allocotum*, *Tapeinidium stenocarpum*, *T. obtusatum*, *Trichomanes varians*, *T. trichophorum*, *T. pseudocapillatum*, *T. lasiophyllum*, *T. infundibulare*, *T. suffrutex*, *T. javanicum* f. *pseudo-asplenoides*, *T. pseudo-arbuscula*, *T. compactum* f. *pauperulum*, *Vittaria squamosipes*, *Lycopodium hydrophilum* var. *ciliolatum*, *L. carolinianum* var. *brevipedunculatum*, *Selaginella subtrisculata*, *S. quadrivenulosa*, *S. puberulipes*, by C. R. W. K. ALDERWERELT VAN ROSENBURGH; *Drimys dictyophlebia*, *D. pitosporoides*, *D. cyclosum*, *D. Versteegii*, *D. reducta*, *D. Lamii*, *D. fistulosa*, *D. pachyphylla*, *Saurauia trachylasia*, *S. Lamii*, *S. mamberamana* and var. *Bruynii*, *S. stichophlebia*, *Xanthomyrtus bryophila*, *X. Klossii* var. *brevipedunculata*, *Decaspermum Lamii*, *D. prostratum*, *D. coriandri* (Bl.), *D. iodochnoum*, *Jambosa acorantha*, *J. Thomseni*, *J. dolichostyla*, *J. Bruynii*, *J. eximiflora*, *Syzygium megalanthelium*, *S. adelphicum*, *S. chamaebuxus*, *Metrosideros Pullei*, by L. DIELS; *Rhus linguata*, *Semecarpus uncata*, *S. Lamii*, by W. SLIS; *Elytranthe mamberamica*, *E. leucophloea*, *E. Bruynii*, *Loranthus plicatulus*, *L. gigantifolius*, *L. cercidioides*, *L. Lamii*, by K. KRAUSE; *Halorrhagis fruticosa*, *H. Gjellerupii*, *H. nemorosa*, *H. suffruticosa* var. *ramosa* and var. *galioides*, *Lysimachia suborbicularis*, *Patersonia novo-guineensis* var. *auriculata*, by F. W. WENT; *Geniostoma Pullei*, *Fagraea suaveolens*, *F. novae-guineae*, by N. CAMMERLOHER; *Pilea Lamii*, *Elatostema Doormanianum*, *E. biakense*, *E. Lamii*, *E. minutiflorum*, *Cypholophus melanocarpoides*, *Pipturus argenteus* var. *incanus* (Wedd.), *Maoutia gracilis*, by H. WINKLER; *Tetrastigma Pullei*, *Leea monophylla*, *Evodia trichopetala*, *E. Doormani montis*, *E. tetragona* var. *pilosa*, *E. aneura*, *E. hortensis* f. *monophylla*, *Melicope alba*, *M. Lamii*, *Terminthodia Treubiana*, *T. orbiculata*, *Acronychia Pullei*, *A. Wichmannii*, *A. anomala*, *Atalantia litoralis*, *Lamiofrutex* n. gen., *L. papuanus*, by C. LAUTERBACH; *Quintinia Schlechteriana*, *Polyosma longibracteolata*, *Schizomeria Pulleana*, *Sericoclea Gjellerupii*, *S. Lamii*, *Elaeocarpus Lamii*, *E. Pulleanus*, *E. de Bruynii*, *Antholoma papuana*, by O. C. SCHMIDT; *Sida rhombifolia* var. *pedunculata*, *Urena lobata* var. *nova-guineensis*, *Wilhelmia* n. gen., *W. sciadiolipida*, *Hibiscus tiliaceus* var. *abutiloides* (Griseb.), *Abelmoschus moschatus* var. *genuinus* (Hochr.), var. *multiformis* and var. *betulifolius* (Mast.), *A. biakensis*, *A. brevicapsulatus* (Hochr.), *Gossypium taitense* f. *scandens*, by B. T. G. HOCHREUTNER; *Clerodendron buranum* f. *typicum* and f. *Lindavianum*, by R. C. BAKHUIZEN VAN DEN BRINK and H. J. LAM.—*Alfred Rehder*.

8123. HAYEK, AUGUST. *Cirsium Sundquistii* nov. hybr. (C. eriophorum × spinosissimum). Bot. Notiser 1922: 268. 1922.—Diagnosis and notes are given in Latin. The plant came from Italian Tyrol at the summit of "Pordoi-joch," above the village of Canazzeo.—P. A. Rydberg.

8124. HICKEN, C. M. *Plantae Flossdorfianae*. [Plants of Flossdorf.] Darwiniana 1: 22-42. 1922.—Eighty-six species are listed, which were collected in the Famatina Mountains of Argentina at an elevation of 3000-4000 m. above sea level. The following new species, varieties, forms, and combinations are included: *Cuscuta Flossdorfi*, *Galium Flossdorfi*, *Astragalus clandestinus* var. *Flossdorfi*, *Viola Flos-Evae* var. *Flossdorfi*, *Senecio pseudotites* var. *glabra*, *Phacelia pinnatifida* f. *minor*, *Descraineria titicacense* (Walp.), and *Chaetanthera pulvinata* var. *polymalla* (Phil.). *Senecio Lorentzii* Phil. is given the name *S. Lorentziella* Hicken. Important notes are recorded for several other species.—*Author (translated)*.

8125. HICKEN, C. M. *Plantae Vattuonei*. [Plants of Vattuone.] Darwiniana 1: 95-153. 1924.—This is a catalogue of 187 species of plants which were collected in the northern Cordilleras of Argentina. Two illustrations give an idea of the character of the region. The following new species, varieties, and forms are included: *Dryopteris Vattuonei*, *Authericum parviflorum*, *Aliphia tigridioides*, *Oxalis Lilloi*, *Galium Lilloi*, *Eupatorium Vattuonei*, *Hysterionica Bakeri*, *Paspalum scrobiculatum* var. *pubigluma*, *Dioscorea monadelphina* var. *opaca*, *Phaseolus panduratus* var. *tuberosus*, *Phacelia pinnatifida* var. *lobulata*, *Siphocampylos tupaeformis* var. *diversifolia*, *Stevia satueifolia* var. *Vattunonei*, *Polygala extraaxillaris* f. *humilis*,

*Eupatorium betonicaeforme* f. *alternifolium*, *Aspilia silphioides* f. *aristata*, and *Senecio mendo-cinus* f. *saltensis*. *Passiflora tucumanensis* var. *naviculata* (Griseb.) Hicken is a new combination.—Author (translated).

8126. HICKEN, C. M. *Sertularium andinum*. [Plants of the Andes.] *Darwiniana* 1: 47-78. 1923.—The author lists 117 species of vascular plants from the Andes of Argentina, which were collected by Gerth in the valleys of the Atuel, Diamante, and Salado Rivers in the years 1911-1912, a region which is still little known botanically. One new species, 10 new varieties, 2 new forms, and 2 new combinations are included, as follows: *Cynanchum fallax*, *Adesmia oligophylla* var. *quadripinnata*, *Astragalus Meyenianus* var. *paucifoliolata*, *Euphorbia portulacoides* var. *minor*, *Sida Ameghinoi* var. *appendiculata*, *Mulinum spinosum* var. *longein-volutrata*, *Verbena radicans* var. *glabra*, *Calceolaria glandulosa* var. *argentina*, *Gamocarpha Gilliesii* var. *Gerthii*, *Haplopappus arbutoides* var. *glandulosa*, *Hypochoeris stenophylla* var. *laciniata*, *Poa chilensis* f. *Gerthii*, *Verbena flava* var. *latiloba* f. *abortiva*, *Calandrinia andicola* Gill. var. *denticulata* (Gill.), and *Discaria nana* (Clos) Weberbauer var. *prostrata* (Miers). Critical notes are recorded on many species.—Author (translated).

8127. JEPSON, W. L. The specific status of *Claytonia nevadensis* Wats. *Madroño* 1: 147-148. 1924.—*Claytonia nevadensis* which has been considered a reduced form of *Montia asarifolia* Howell is found, by study of recent collections, to be distinct. The new combination, *Montia nevadensis* (Wats.), is made.—Roxana Stinchfield Ferris.

8128. JOHNSTON, I. M. Expedition of the California Academy of Sciences to the Gulf of California in 1921. The botany (the vascular plants). *Proc. California Acad. Sci.* 12: 951-1218. *Map.* 1924.—The collections upon which this paper is based were made by the author principally on the numerous islands of the Gulf of California. In addition to the catalogue of the species collected, in which the reference and the type locality as well as distributional notes are given, there is an introduction in which the geology, climate, phytogeography, ecology, relationships and origins of the biota, and exploration are discussed. The following new species, varieties and combinations are made.—New combinations: *Thelypteris augescens* var. *puberula* (Fee) Munz & Johnston, *Distichlis Palmeri* (Vasey) Fassett, *Glaucothea Brandegeei* (Purpus), *G. elegans* (Becc.), *G. aculeata* (Brandg.), *Agave sobria* var. *Roseana* (Trel.), *Agave Dattilio* var. *vezans* (Trel.), *Suaeda ramosissima* (Standley), *Wislizenia refracta* var. *Palmeri* (Gray), *Errazurizia megacarpa* (Wats.), *E. Benthami* (Brandg.), *E. multifoliolata* (Clos), *Parosela divaricata* var. *cinerea* (Gray), *P. Emoryi arenaria* (Brandg.), *P. Emoryi* var. *juncea* (Rydb.), *Fagonia chilensis* var. *Barclayana* (Benth.), *F. chilensis* var. *aspera* (Gay), *F. chilensis* var. *laevis* (Standley), *F. chilensis* var. *Rosei* (Standley), *F. chilensis* var. *insularis* (Standley), *F. chilensis* var. *glutinosa* (Vail), *F. chilensis* var. *pachyacantha* (Rydb.), *F. chilensis* var. *Palmeri* (Vasey & Rose), *Guaicum Coulteri* var. *Palmeri* (Vail), *Bursera rhoifolia* (Benth.), *Euphorbia pediculifera* var. *involuta* (Millsp.), *Euphorbia polycarpa* var. *petrina* (Wats.), *Veatchia discolor* var. *pubescens* (Wats.), *V. discolor* var. *veatchiana* (Kell.), *Paullinia spinosa* (Radlk.), *Hybanthus fruticosus* var. *flavescens* (Dowell), *Cynanchum Palmeri* var. *peninsulare* (Blake), *Cryptantha Grayi* var. *cryptochaeta* (Macbride), *Hyptis Emoryi* var. *Palmeri* (Wats.), *H. laniflora* var. *insularis* (Standley & Goldman), *Lycium Richii* var. *Hassei* (Greene), *L. parvifolium* var. *peninsulare* (Brandg.), *Galvesia juncea* var. *pubescens* (Brandg.), *Ruellia californica* (Rose), *R. peninsularis* (Rose), *Vaseyanthus insularis* var. *Brandegei* (Cogn.), *Hofmeisteria pluriseta* var. *laphamioides* (Rose), *H. tenuis* (Wats.), *Bebbia juncea* var. *atriplicifolia* (Gray), *Encelia farinosa* var. *phenicodonta* (Blake), *Palafoxia linearis* var. *leucophylla* (Gray), *Perityle lobata* (Rydb.), *P. cuneata* var. *marginata* (Rydb.), *Porophyllum confertum* var. *ochroleucum* (Rydb.), *P. tridentatum* var. *crassifolium* (Wats.).—New species and new variations: *Cyperus dioicus*, *Agave chrysoglossa*, *A. Oweni*, *A. Sleviniana*, *Struthanthus Haenkei* var. *angustatus*, *Eriogonum galioides*, *E. inflatum* var. *deflatum*, *Cercidium molle*, *Indigofera argentea*, *Fagonia densa*, *Thamnosma trifoliata*, *Ditaxis Brandegei* var. *intonsa*, *Euphorbia ceroderma*, *E. Chamberlini*, *Sapium biloculare* var. *amplum*, *Colubrina californica*, *Condalia globosa*, *C. globosa* var. *pubescens*, *C. Brandegei*, *Sympetaleia tenella*, *Macrosiphonia hesperia*, *Asclepias leptopus*, *Cuscuta nevadensis*, *Jacquemontia Eastwoodiana*, *Coldenia canescens* var. *subnuda*, *C. cuspidata*, *Cryptantha angelica*, *C. Grayi* var. *nesiotica*, *Hyptis Emoryi* var. *amplifolia*, *Physalis crassifolia* var. *infundibularis*, *Galvesia juncea* var. *foliosa*, *Maurandya flaviflora*, *Penstemon Clevelandi* var. *angelicus*, *Carlownrightia californica* var. *pallida*,



*Houstonia gracilentia*, *Maximowiczia sonorae* var. *peninsularis*, *M. sonorae* var. *brevicaulis*, *Vaseyanthus insularis* var. *inermis*, *Hofmeisteria filifolia*, *H. pluriseta* var. *pauciseta*, *Aplopappus arenarius* var. *incisifolius*, *A. arenarius* var. *Rossii*, *Verbesina oligocephala*, *Porophyllum leptophyllum*, *Peucephyllum Schottii* var. *latisetum*.—*Roxana Stinchfield Ferris*.

8129. KLOOS, A. W., JR. *Het geslacht Viola in Nederland*. [The genus *Viola* in the Netherlands.] *Nederland. Kruidk. Arch.* 1923: 138-208. 1924.—*Viola* species which occur in the Netherlands belong to the sections *Nominium* and *Melanium*. The following are described as new to science: *Viola caninnesas* n. hyb. (= *V. canina dunensis* × *V. Riviniana*), *V. batava* n. hyb. (= *V. canina dunensis* × *V. Riviniana pubescens*).—*J. C. Th. Uphof*.

8130. KOIDZUMI, GEN'ITI. *Contributions ad Cognitionem Florae Asiae Orientalis*. [Contributions to the knowledge of the flora of eastern Asia.] *Bot. Mag. Tokyo* 37: 37-59. 1923.—The author, in continuation of his studies of the eastern Asiatic Flora, has described the following new species and new varieties. *Anamtia* is established as a new genus of Myrsinaceae from Japanese Hondo, related to the genus *Rapanea*; *Rhododendron tectum*, *Coptis quinquefolia* Miq. var. *pedatoquinquefolia*, *Anamtia stolonifera*, *Salvia japonica* Thunb. var. *lutescens*, *Salvia Fushimiana*, *S. nipponica* Miq. subsp. *robusta*, *Prunus kinkinensis*, *Ilex stenophylla*, *Spiraea ribisoidea*, *S. Kinashii*, *Lactaria Nakaiana*, *L. Iwasakiana*, *Poa ibukiana*, *Primula Okamotoi*, *P. senanensis*, *Fraxinus verecunda*, *Aster sohayakiensis*, *Ligularia telphusaeformis*, *Euphrasia pubigera*, and *Kalopanax autumnalis*.—The changes of the scientific names are as follows: *Menziesia tubiflora* n. name to *M. ciliicalyx* var. *tubiflora* Koidz., *Salvia nipponica* f. *trisecta* n. name to *Salvia trisecta* Matsum., *Prunus pudibunda* Koidz. f. *antiqua* n. name to *P. antiqua* Miyoshi, *Gentiana axillariflora* Levl. & Vnt. var. *Naitoana* n. name to *G. Naitoana* Levl. & Vnt., *Gentiana axillariflora* var. *coreana* n. name to *G. jesoana* var. *coreana* Nakai, *Rosa hakonensis* n. name to *R. Luciae* var. *hakonensis* Fr. & Sav., *Lactaria acuminata* n. name to *Ochrosia acuminata* Trimen, *L. glomerata* n. name to *O. glomerata* Valetou, *L. borbonica* n. name to *O. borbonica* Gmel., *L. Kilneri* n. name to *O. Kilneri* Müller, *Bleekeria* (Hassk.) emend. div. sp. to *Ochrosia* div. sp., *Fraxinus commemoralis* n. name to *F. Spaethiana* Lingl. p. p., *Asteromoea pinnatifida* n. name to *Aster indicus* var. *pinnatifida* Maxim., *A. incisa* n. name to *A. incisus* Fischer. Also the full synonymy of the following species are given: *Rosa multiflora* Thunb. var. *trichogyna* Fr. & Sav., *R. Wichuraiana* Crepin, and *R. fujisanensis* Makino.—*Author*. (*Courtesy Japanese Jour. Bot.*)

8131. LECOMTE, HENRI. *Hamamélidacées nouvelles du Haut-Tonkin*. [New Hamamelidaceae from Tongking (French Indo China).] *Bull. Mus. Hist. Nat. [Paris]* 30: 390-393. 1924.—The author describes *Rhodoleia Championi* Hook. var. *Brilletii* n. var., *Altingia cambodiana*, and *Bucklandia tonkinensis* n. spp.—*John M. Fogg, Jr.*

8132. MOXLEY, GEORGE L. *An albino form of Zauschneria*. *Bull. Southern California Acad. Sci.* 23: 12. 1924.—This is an albino form of *Zauschneria microphylla* and is probably the 1st record of albinism in the genus.—*L. R. Abrams*.

8133. MUNZ, PHILIP A., AND IVAN M. JOHNSTON. *The Penstemons of southern California*. *Bull. Southern California Acad. Sci.* 23: 21-40. 1924.—The paper is based upon field studies and critical examination of material in several of the leading herbaria. Keys and detailed descriptions are given together with full distributional notes. Numerous specimens are cited. Twenty-four species and several varieties are recognized of which the following are either new or new combinations: *P. Rothrockii* var. *jacinthensis* (Abrams), *P. ternatus* var. *septentrionalis*, *P. linarioides* var. *californicus*, *P. speciosus* var. *piliferus* (Heller), *P. heterophyllus* var. *australis*.—*L. R. Abrams*.

8134. MURBECK, SV. *Species nonnullae novae maroccanae*. [Some new species from Morocco.] *Bot. Notiser* 1922: 269-276. 1922.—The author describes the following species: *Lavandula maroccana* from Djebel Tirardine; *Imarera* between Oucheffine and Asni, *Thymus leptobotrys* from Amismiz and Oucheffine; *T. lythroides* from several localities around Demnat; *T. pseudomastichina* between Tagadirt N'Bourd and Asni and in the valleys of Ourika and Ait Mesan; and *Cynoglossum atlanticum* from Amismiz, all in the lower regions of Atlas Major.—*P. A. Rydberg*.

8135. NAKAI, TAKENOSHIN. *Flora Sylvatica Koreana. XIII et XIV*. [Forest flora of Korea XIII and XIV.] *P.* 1-46. 13 pl.; and p. 1-133. 29 pl. Published by the Government of Chosen. 1923.—It contains references, history of investigation, economic uses, distri-

bution, classification of genera, species and varieties, synonymy, name-table and illustrations of species and varieties.—Part XIII contains Diapensiaceae, Ardisiaceae, Ebenaceae, Symplocaceae and Styracaceae, including the following: *Diapensia abovata*, *B. ladhia japonica*, *B. villosa*, *B. villosa* var. *Taquetii*, *Diospyros Lotus*, *D. Kaki*, *Palura paniculata*, *P. paniculata* var. *leucocarpa*, *P. Tanakana*, *P. argutidens*, *Bobua prunifolia*, *Styrax japonica*, and *S. Obassia*.—Part XIV contains Loganiaceae, Apocynaceae, Cordiaceae, Pyrenaceae, Labiatae, Solanaceae, Rhinanthaceae, Bignoniaceae, Rubiaceae and Compositae, including the following: *Gardneria insularis*, *Trachelospermum a. pubescens*, *T. asiaticum* *β. glabrum*, *Ehretia thyrsoflora*, *Callicarpa dichotoma*, *C. japonica*, *C. japonica* var. *Taquetii*, *C. japonica* var. *luxurians*, *C. mollis*, *C. mollis* var. *microphylla*, *Siphonanthus trichotomus*, *S. trichotomus* var. *ferrugineus*, *Vitex rotundifolia*, *V. chinensis*, *Thymus Przewalskii*, *T. Przewalskii* var. *magnus*, *Lycium chinense*, *Paulownia tomentosa*, *Catalpa ovata*, *Campsis chinensis*, *Adina rubella* f. *rubescens*, *A. rubella* f. *viridis*, *Paederia chinensis*, *P. chinensis* var. *velutina*, *P. chinensis* var. *angustifolia*, *Damnacanthus indicus a. genuinus*, *D. indicus* var. *latifolius*, *Artemisia Besseriana a. triloba*, *A. Gmelini* var. *Geblariana*, *A. Gmelini* var. *vestita*, *A. Messerschmidtiana a. viridis* f. *typica* and f. *laxiflora*, *A. Messerschmidtiana* var. *discolor*, and *Aster Oharai*. The enumerations of all Korean species belonging to Cordiaceae, Pyrenaceae, Labiatae, Solanaceae, Rhinanthaceae, Rubiaceae and Compositae are added.—Author. (Courtesy Japanese Jour. Bot.)

8136. NAKAI, TAKENOSHIN. *Genera nova Rhamnacearum et Leguminosarum ex Asia orientali*. [New genera of Rhamnaceae and Leguminosae from eastern Asia.] Bot. Mag. Tokyo 37: 29-34. 1923.—This paper gives the criticisms and descriptions regarding the new genus *Berchemiella* of the Rhamnaceae which includes *Chaydaia Wilsonii* and *Rhamnella berchemiaefolia*, and the new genus *Echinosophora* of the Leguminosae from Korea.—Author. (Courtesy Japanese Jour. Bot.)

8137. NAKAI, TAKENOSHIN. *Trees and shrubs indigenous in Japan proper*. Vol. I. (Japanese.) 511 p. 272 fig. Published by Seibido Shoten, Tokyo, 1922.—This book is the 1st part of an illustrated ligneous Flora of Japan proper, which contains all trees and shrubs of Gamopetalae beginning from Ericaceae and ending in Compositae. It contains 276 species and 113 varieties belonging to 20 families. The new sections and varieties which are contained in this book are as follows: *Tripetaleia* sects. *Eutripetaleia* and *Schizocalyx*, *Menziesia* sects. *Heteromenziesia* and *Semimenziesia*, *Rhododendron* sects. *Sinenses* and *Verticillatae*, *Leucothoe* sects. *Paraleucothoe* and *Eubotryoides*, *Meisteria* sect. *Eumeisteria*, *Pterostyrax* sects. *Pentaptera* and *Decaveniae*, *Styrax* sects. *Japonostyrax* and *Vaginostyrax*. *Phyllodoce tsugaefolia*, *Menziesia lasiophylla*, *Rhododendron glabius*, *R. nikoense*, *R. eriocarpum*, *R. lusiadiscum*, *R. transiens*, *R. hortense*, *Meisteria shikokiana*, *Arctous ruber*, *Vaccinium versicolor*, *V. lasiocarpum*, *V. nikkoense*, *V. koreanum*, *Diapensia obovata*, *Osmanthus asiaticus*, *O. aurantiacus*, *O. ilicifolius*, *Ligustrum yessoense*, *Fraxinus intermedia*, *F. yamatense*, *Trachelospermum majus*, *Callicarpa cinnamomea*, *Siphonanthus yakusimensis*, *Serissa crassiramea*, *Damnacanthus giganteus*, *Ledum palustre* var. *nipponicum*, *L. palustre* var. *yessoense*, *Menziesia ciliicalyx* var. *tubiflora*, *Rhododendron obtusum* var. *latifolium*, *R. obtusum* var. *majus*, *R. Kaempferi* var. *macrogemmum*, *Cassiope lycopodioides* var. *laxa*, *Leucothoe Grayana* var. *venosa*, *L. Grayana*, var. *hypoleuca*, *Pieris japonica* var. *monostachya*, *Oxycoccoides japonicus* var. *sinicus*, *Bladhia villosa* var. *liukiensis*, *Ligustrum Tschonoskii* var. *leiocalyx*, *Ehretia thyrsoflora* var. *latifolia*, *Thymus Przewalskii* var. *laxa*, *Adina globiflora* var. *macrophylla*, *Gardenia floride* var. *boninensis*, and *Damnacanthus indicus* var. *formosanus*.—Author. (Courtesy Japanese Jour. Bot.)

8138. PAMPANINI, R. *Nuovo contributo alla conoscenza della Flora della Cirenaica*. [New contribution to the Flora of Cirenaica.] Nuovo Gior. Bot. Italiano n.s. 31: 193-233. 1924.—Four hundred and two species and varieties of phanerogams and 15 of micromicetes are listed from the regions of Bengaz, Merg, Cirene and Derna in North Africa. Of these, 12 are new for Cirenaica, 12 for Libya, and 8 are proposed as new species or varieties, namely: *Clematis Flammula* L. var. *Sancti-Marini* Pamp. (1917) f. *angustissima*, *Lathyrus pseudo-Cicera*, *Trifolium arvense* L. var. *cyrenaicum*, *Linum decumbens* var. *parviflorum*, *Echinum italicum* L. var. *Scaetiae*, *Carthamus lanatus* L. var. *longifolius*, *Hedypnois polymorpha* DC. var. *tubaeformis* Batt. & Trab. f. *elata*, and *Picris Maginiana*. The following new varieties of fungi are also described by A. TROTTER: *Ustilago bromivora* (Tul.) Fisch. Wald. f. *Brachypodii*, *U.*



*segetum* (Bucs.) Dietr. var. *Elymi*, *Fusicladium Fraxini* Aderh. var. *Phillyreae*, *Puccinia Cirsii* Lasch. f. *Notobasi-syriacae*.—P. D. Caldis.

8139. PARISH, S. B. *Cleomella obtusifolia* Torr. & Frem. Bull. Southern California Acad. Sci. 22: 12-14. 1923.—The author discusses the variability of the species and reduces to synonymy *Cleomella obtusifolia* var. *pubescens* A. Nels. and *Cleomella taurocranos* A. Nels.—L. R. Abrams.

8140. PELLEGRIN, FRANÇOIS. *Plantae Letestuanæ novæ ou Plantes nouvelles récoltées par M. LeTestu de 1907 à 1919 dans le Mayombe congolais*. IX. [New plants collected by LeTestu in Mayomba. IX.] Bull. Mus. Hist. Nat. [Paris] 30: 326-328. 1924.—The author describes 3 new species, as follows: *Petalonema glanduligerum*, *Gambeya nyangensis*, and *Diospyros LeTestui*.—John M. Fogg, Jr.

8141. PILGER, R. Ueber die Nomenklatur von zwei *Araucaria*-Arten. [Nomenclature of two *Araucaria* species.] Mitteil. Deutsch. Dendrol. Ges. 33: 15-18. 1923.—The name of the well-known *Araucaria imbricata* should be changed into the 1st name given *A. araucana* (Molina) K. Koch; and *A. brasiliana* (or *brasiliensis*), into *A. angustifolia* (Bertoloni) O. Kuntze.—J. C. Th. Uphof.

8142. RAYMOND-HAMET, M. Sur le genre "Macrosepalum." [The genus *Macrosepalum*.] *Annali di Botanica* 16: 192-216. Pl. 2-3. 1924.—After a study and comparison of authentic specimens in different herbaria, the author concludes that *Macrosepalum turkestanicum* is identical with *Sedum tetramerum* Trautv. which is only a variety of *S. aetnense* Tin. *S. Skorpili*, *S. albanicum* and *S. erythrocarpum* are also identical with *S. aetnense*. The latter should be split into 2 varieties: *S. aetnense* var. *genuinum* R.H. having ciliated leaves and sepals and including *S. aetnense* Gussone, *S. Skorpili* Velenovsky, *S. albanicum* Ritter Beck v. Managetta and *S. erythrocarpum* Pau; and *S. aetnense* var. *tetramerum* R.H. having the margins of leaves and sepals smooth and including *S. tetramerum* Trautv. and *Macrosepalum turkestanicum* Regel & Schnalsh. The variety *genuinum* has been collected in Spain, Italy, Albania, Bulgaria and Asia Minor, while var. *tetramerum* has been found in Caucasus, Boukhara, Daghestan, Asia Minor and Persia.—P. D. Caldis.

8143. SAMUELSSON, GUNNAR. Zwei neue *Epilobium*-Arten aus der Arktis. [Two new species of *Epilobium* from the Arctics.] Bot. Notiser 1922: 259-267. Fig. 1-2. 1922.—The author describes the following species: *Epilobium arcticum* from Waigatsch, Novaja Semlja and the lower Lena Valley, and *E. tundrarum* from Waigatsch. The former has also been collected on Greenland where it was mistaken for *E. anagallidifolium*, but Haussknecht determined it as *E. lactiflorum*. *E. tundrarum* might be a hybrid between *E. palustre* and *E. arcticum* or *E. davuricum*.—P. A. Rydberg.

8144. SMALL, JOHN K. Plant novelties from Florida. Bull. Torrey Bot. Club 51: 379-393. 1924.—The following new species from Florida are described: *Tradescantia roseolens*, *Delopyrum basiramia*, *Kuhnistera truncata*, *Polygala cumulicola*, *Ilex cumulicola*, *I. Buswellii*, *Cyrtilla arida*, *Lechea cernua*, *Chionanthus pygmaea*, *Conradina grandiflora*, *Borreria terminalis*, *Aster plumosus*, and *A. simulatus*. *Clinopodium Ashei* (Weatherby) is made a new combination. *Dentoceras* is proposed as a new genus for *D. myriophylla* n. sp.; it is related to *Polygonella*. *Deeringothamnus* of the Anonaceae is a new genus for *D. pulchellus* n. sp.; *Sanidophyllum* (Hypericaceae), for *S. cumulicola* n. sp.; *Litrisa* (Eupatorieae), for *L. carnosa* n. sp.; and *Ammopursus* (related to *Laciniaria*), for *A. Ohlingerae* (Blake) n. comb.—P. A. Munz.

8145. SURINGAR, VALCKENIER. Ueber die Nomenklature einiger Gehölzarten. [Nomenclature of some woody species.] Mitteil. Deutsch. Dendrol. Ges. 33: 18-23. 1923.—The synonymy and an extensive literature is given of the following species: *Pseudotsuga Douglasii*, *Tsuga Mertensiana*, *T. Pattoniana*, *Quercus Turneri*, *Q. pseudoturneri*, *Q. aizoon*, *Q. Koehni*, *Q. austriaca*, *Q. sempervirens*, *Rhododendron molle*, *R. luteum*, *R. nudiflorum*, *R. calendulaceum*, *R. flavum*, and *R. occidentale*.—J. C. Th. Uphof.

8146. WOLF, EGBERT. *Lonicera Maximowiczii* Rupr. und *L. sachalinensis* Egb. Wolf. Mitteil. Deutsch. Dendrol. Ges. 33: 35-37. 1923.—*Lonicera Maximowiczii* var. *sachalinensis* Fr. Schmidt is raised to specific rank, as *L. sachalinensis* Egb. Wolf, and an amplified description of it is given. A variant of this species is characterized as var. *villosa*.—J. C. Th. Uphof.

8147. WOLF, EGBERT. *Sambucus kamschatica*. Mitteil. Deutsch. Dendrol. Ges. 33:

32-34. 14 fig. 1923.—*Sambucus kamschatica* is described as new. Seed were collected by V. L. Komarov in Kamchatka, and planted in the Botanical Garden at Petrograd.—*J. C. Th. Uphof*.

8148. WOLF, EGBERT. *Sambucus racemosa* Linné. Mitteil. Deutsch. Dendrol. Ges. 33: 24-31. 1 fig. 1923.—A large number of varieties, subvarieties, and forms of *Sambucus racemosa*, which occur in various places in Russia, are described. The variability of *S. racemosa* makes it sometimes difficult to distinguish forms which belong to *S. pubens* Michx.—*J. C. Th. Uphof*.

### REVISIONS AND MONOGRAPHS

8149. GLEASON, H. A. Studies on the flora of northern South America—I. Bull. Torrey Bot. Club 51: 443-448. 1924.—Eight species of *Centropogon* are keyed out and *C. Andreanus*, *C. asservatus*, *C. caldasensis*, *C. variabilis*, *C. gravidus*, and *C. breviflorus* are described as new species in the section *Burmeisteroides*. *C. Mutisianus* (HBK.) is made as a new combination.—*P. A. Munz*.

8150. GLEASON, H. A. Studies on the flora of northern South America—II. Bull. Torrey Bot. Club 52: 1-20. Pl. 1. 1925.—The stellate-tomentose species of *Centropogon* are treated, 39 being keyed out. *Centropogon latisepalus*, *C. aurantiacus*, *C. fulvus*, *C. ellipticus*, *C. intonsus*, *C. Jahni*, *C. barbatellus*, *C. alatus*, *C. nervosus* Wimmer, *C. comosus*, *C. hirsutus*, *C. cinereus*, *C. licayensis*, *C. occultus*, *C. Featherstonei*, *C. Macbridei*, and *C. perlongus* are described as new species. The following are new combinations: *C. Caoutchouc* (HBK.), *C. ferrugineus* (L.f.), *C. ferrugineus parviflorus* (Zahlbr.), *C. australis* (Wimmer), and *C. verbascifolius* (Presl).—*P. A. Munz*.

8151. GLEASON, H. A. Studies on the flora of northern South America—III. Bull. Torrey Bot. Club 52: 49-74. Pl. 3. 1925.—In further consideration of the genus *Centropogon*, 24 species of the group *Amplifolii* are keyed out and the following novelties are described: *Centropogon congestus*, *C. gesnerioides*, *C. angustus*, *C. serratus*, *C. curvatus*, *C. parvulus*, *C. pedicellaris*, *C. pedicellaris* var. *gallerensis*, *C. ciliatus*, *C. decemlobus*, *C. Purdieanus*, *C. leucophyllus*, *C. carpinoides*, *C. griseus*, and *C. Hitchcockii*. Several species of *Siphocampylus* are treated and *S. Pennellii*, *S. cylindricus*, *S. stellatus*, *S. Hazenii*, *S. dentatus*, *S. pilosus*, *S. venosus*, *S. obovoideus*, and *S. coronatus* are described as new species.—*P. A. Munz*.

8152. GLEASON, H. A. Studies on the flora of northern South America—IV. Bull. Torrey Bot. Club 52: 93-104. 1925.—Seventeen species of *Burmeistera* are keyed out. *B. glauca* (Wimmer) is published as a new combination and the following as new species: *B. longifolia*, *B. Killipii*, *B. Pennellii*, *B. connivens*, *B. carnosus*, and *B. asclepiadea*.—*P. A. Munz*.

8153. HONDA, MASAJI. Revisio Graminum Japoniæ I. [Revision of grasses of Japan I.] Bot. Mag. Tôkyô 36: 111-116. 1922.—In this paper the 4 following items are contained: (1) The 3 varieties and 2 forms of *Arundinella anomala* Steudel; (2) The reduction of the genus *Zoysia* Willdenow to *Osterdamia* Necker on account of the priority, owing to the investigation of Hitchcock, the American botanist. Our species belonging to this genus are as follows: *Osterdamia japonica* (Steudel) Hitchcock, *O. Zoysia* (Willdenow) Honda, *O. Zoysia α typica* Honda, *O. Zoysia β. tenuifolia* (Willdenow) Honda, *O. Matrella* (Linné) Kuntze, *O. sinica* (Hance) Honda (This combination not being right, it is corrected in my 2nd paper.), *O. Iiukuensis* Honda n. sp., *O. macrostachya* (Franchet & Savatier) Honda. (This plant is Hackel's so-called *Ischæmum muticum*.); (3) The 2 species of *Paspalum*, namely *P. formosanum* Honda n. sp. and *P. dilatatum* Poiret (Species of Bonin Island. New to the Japanese flora); (4) *Eriochloa polystachya* HBK. or *Eriochloa annulata* Kunth is changed to *Eriochloa ramosa* (Retzius) Kuntze. (The plant which is designated by this scientific name, is to be divided into 2 distinct species by further investigation. The details will be in the 3rd report.)—*Author*. (Courtesy Japanese Jour. Bot.)

8154. HONDA, MASAJI. Revisio Graminum Japoniæ III. [Revision of the grasses of Japan III.] Bot. Mag. Tôkyô 37: 113-124. 1923.—In this article the author has reported the following matters: (1) *Paspalum distachyon* Poiteau to be added to the Formosan flora; (2) The descriptions of 2 new species of *Miscanthus* from Formosa, *M. flavidus* and *M. Matsudae*; (3) *Eriochloa ramosa* Kuntze, reported in Bot. Mag. Tôkyô 36: 116, 1922, by the author is to be partly emended and changed to the new species, *Eriochloa Hackelii*; (4) The adoption



of the genus *Hymenachne* Beauvois. *Panicum amplexicaule* Rudge is to be transferred to *Hymenachne amplexicaulis* Nees; (5) By the acknowledgement of the genus *Sacciolepis* Nash, the scientific names of our 2 grasses are to be transferred as follows: *Panicum indicum* Linné = *Sacciolepis indica* Chase and *P. indicum* var. *oryzeturum* Makino = *Sacciolepis oryzetora* Honda; (6) Beauvois's *Echinochloa* is to be adopted as a distinct genus, and from this standpoint I have classified *Echinochloa crusgalli* Beauvois as follows: *Echinochloa crusgalli* Beauvois, subsp. *a genuina* Honda vars. *a typica* Honda and *β echinata* Honda, subsp. *b submutica* Honda vars. *a typica* Honda and *β hispidula* Honda, subsp. *c colona* Honda vars. *a typica* Honda and *β edulis* Honda.—Author. (Courtesy Japanese Jour. Bot.)

8155. HONDA, MASAJI. *Revisio Graminum Japoniæ IV.* [Revision of the grasses of Japan IV.] Bot. Mag. Tôkyô 38: 49-59. 1924.—This paper contains the following 11 items: (1) The descriptions of 4 new *Ischaemum* species from Formosa: *I. nodulosum*, *I. akoense*, *I. Tashiroi*, and *I. setaceum*; (2) Hackel's variety *stenoptera* of *Ischaemum anthephroides* Miquel is to be distinguished from the type and changed to the name *Ischaemum stenopterum* Honda; (3) the publication of Nakai's *Ischaemum coreanum*, with my description of it; (4) *Ischaemum crassipes* var. *Hondae* Nakai is partly to be transferred to *I. crassipes* var. *aristatum* Nakai, and partly to *Ischaemum Hondae* Matsuda. The new variety of the author, *tomentosum* of the latter species is described here; (5) the new scientific name *Ischaemum Urvilleanum* Kunth var. *ischaemoides* Honda is determined by Bonin-species; (6) *Ischaemum ciliare* var. *scrobiculatum* Honda, *I. timorense* var. *pagnense* Hackel and *I. guianense* Kunth are newly recognized from Formosa; (7) the establishment of the new genus *Eulaliopsis*. (The type species is *E. angustifolia* Honda basing upon Hackel's *Ischaemum angustifolium*.); (8) the adoption of the genus *Eulalia* Kunth, *E. Tanakae* Honda and *E. quadrinervis* Kuntze in Japan, and *E. speciosa* Kuntze and its variety *modesta* Honda in Corea; (9) the new variety, *Isachne Myostis* var. *minor* Honda is the tiny form from Yakushima Island; (10) *Isachne heterantha* Hayata from Formosa is the synonym of *I. dispar* Trinius; (11) *Panicum muscarium* Trinius was discovered in Formosa.—Author. (Courtesy Japanese Jour. Bot.)

8156. JEPSON, W. L. *A revision of Californian Umbelliferae.* Madroño 1: 101-114, 117-130, 133-146. Fig. 1-30, 1923. *Ibid.* 1: 149-162. Fig. 31-38. 1924.—(To be continued.) A systematic treatment of the Californian genera and species is given. The following new combinations, names, genera, species, and varieties are made: *Oreonana vestita* (Wats.), *Lomatium lucidum* (Nutt.), *L. parvifolium* var. *pallidum* (C. & R.), *L. macrocarpum* var. *ellipticum* (T. & G.), *L. Plummerae* var. *Sonnei* (C. & R.), *L. Parryi* (S. Wats.), *L. medicale* var. *puberulum* (Gray), *L. ambiguum* var. *leptocarpum* (C. & R.), *Eryngium Jepsoni* var. *Parishii* (C. & R.), *E. Vasyi* var. *oblanceolatum* (C. & R.), *Sanicula Menziesii* var. *nudicaulis* (H. & A.), *S. bipinnatifida* var. *nemoralis* (Greene), *S. laciniata* var. *serpentina* (Elmer), *Osmorrhiza nuda* var. *brevipes* (C. & R.), *O. nuda* var. *divaricata* (Britt.), *O. Bolanderi* (Gray), *Hydrocotyle verticillata* var. *cuneata* (C. & R.), *Lilaeopsis lineata* var. *occidentalis* (C. & R.), *Leptotaenia dissecta* var. *multifida* (Nutt.); *Lomatium caruifolium* var. *denticulatum*; *Oreonana* n. gen., *O. californica*; *Eryngium articulatum* var. *Bakeri*, *E. pinnatisectum*, *E. castrense*, *E. castrense* var. *vallicolum*, *E. globosum*, *E. globosum* var. *medium*, *Sanicula Menziesii* var. *pedata*, *S. Menziesii* var. *foliacea*, *S. bipinnatifida* var. *flava*, *S. nevadensis* var. *glauca*, *Eulophus Bolanderi* var. *benignus*, *E. cuspidatus*, *E. californicus* var. *sanctorus*, *Podistera albensis*, *Leptotaenia humilis* var. *denticulata*, *Lomatium lucidum* var. *repostum*, *L. caruifolium* var. *solanense*, *L. utriculatum* var. *glabrum*, *L. macrocarpum* var. *Douglasii*, *L. dasycarpum* var. *medium*, *L. dasycarpum* var. *decorum*, *L. ciliolatum*, *L. nevadense* var. *holopterum*, and *L. marginatum* var. *purpureum*.—Roxana Stinchfield Ferris.

8157. RYDBERG, P. A. *Some senecioid genera—I.* Bull. Torrey Bot. Club 51: 369-378. 1924.—The genera *Cacalia*, *Psacalium*, *Pericalia*, and *Mesadenia* are discussed. A key is given to 13 species of *Psacalium*, in which genus the following new combinations are made: *P. Holwayanum* (B. L. Robinson), *P. Conzattii* (Rob. & Greenm.), *P. Coulteri* (Greenm.), *P. megaphyllum* (Rob. & Greenm.), *P. obtusilobum* (Rob. & Greenm.), *P. peltigerum* (Rob. & Seaton), *P. poculiferum* (S. Wats.), and *P. tabulare* (Hemsley). *Psacalium argutum*, *P. Nelsonii*, and *P. Langlassei* are described as new species. In *Pericalia*, 4 species are keyed out and the following new combinations made: *Pericalia sessilifolia* (H. & A.), *P. suffulta* Greenm., *P. ovatifolia* (Schultz Bip.), and *P. michoacana* (B. L. Robinson). In *Mesadenia*, *M. angustifolia* is described as new.—P. A. Munz.

8158. RYDBERG, P. A. Some senecioid genera—II. Bull. Torrey Bot. Club 51: 409-420. 1924.—Thirty-five species are keyed out for *Odontotrichum*, with new combinations as follows: *O. bipinnatifidum* (A. Gray), *O. decompositum* (A. Gray), *O. platylepis* (Rob. & Seaton), *O. paucicapitatum* (Rob. & Greenm.), *O. sinuatum* (Cerv.), *O. Pringlei* (S. Wats.), *O. Schaffneri* (A. Gray), *O. radulaefolium* (HBK.), *O. tussilaginoide* (HBK.), *O. brachycoma* (Blake), *O. ampullaceum* (Greenm.), *O. amplifolium* (DC.), *O. rumicifolium* (Klatt), *O. silphiifolium* (Rob. & Greenm.), *O. Goldsmithii* (B. L. Robinson), *O. pachyphyllum* (Schultz Bip.), *O. Palmeri* (Greene), *O. Purpusi* (Greenm.), *O. globosum* (Rob. & Fern.), *O. eriopodum* (Klatt), *O. chiapense* (Hemsley), *O. napeaefolium* (DC.), *O. jatrophioides* (HBK.), *O. tridactylitis* (Rob. & Greenm.), *O. Liebmanii* (Buchinger), *O. pallescens* (Klatt), *O. napellifolium* (Schauer), and *O. calvum* (Brand.). The following new species, all from Mexico, are described: *O. filicifolium*, *O. scabrum*, *O. amplum*, *O. nephrophyllum*, *O. delphinifolium*, and *O. cervinum*.—P. A. Munz.

### FLORISTICS AND PLANT DISTRIBUTION

8159. DANSER, B. H. Determineertafel voor de in Nederland in het wild gevonden Polygonaceae. [Determination table of the wild species of Polygonaceae found in the Netherlands.] Nederland. Kruidk. Arch. 1923: 271-306. 1924.—A key, mostly dichotomous, is given to all the Polygonaceae of the Netherlands.—J. C. Th. Uphof.

8160. DAVIDSON, A. Additions to the local flora. Bull. Southern California Acad. Sci. 23: 126. 1924.—Two species, *Clarkia Xantiana* Gray and *Mimulus Breweri* (Greene) Coville are recorded.—L. R. Abrams.

8161. GEISER, SAMUEL WOOD. The flowering plants of a typical locality in northeastern Iowa. Bull. Upper Iowa Univ. 20: 1-19. 1918.—The present paper records the occurrence and habitat about Fayette, Iowa, of 664 species of seed plants. Common and scientific names are given.—J. M. Greenman.

8162. HICKEN, C. M. El género *Castilleja* cerca de la Capital federal. [The genus *Castilleja* about the federal capital.] Darwiniana 1: 87. 1923.—The genus *Castilleja*, which was not known previously to occur within 375 miles of Buenos Aires, has been found by the author in the vicinity of the capital of Argentina.—Author.

8163. HICKEN, C. M. *Myrtus cuspidata* Berg. en la provincia de Buenos Aires. Darwiniana 1: 86. 1923.—*Myrtus cuspidata* Berg. is recorded from the southern part of the Province of Buenos Aires.—Author.

8164. JANSEN, P., EN W. H. WACHTER. Floristische Aanteekeningen XXI. [Floristic notes XXI.] Nederland. Kruidk. Arch. 1923: 209-231. 1924.—Localities are given for a number of rare plants found in the Netherlands, many being adventive.—J. C. Th. Uphof.

8165. KLOOS, A. W., JR. Aanwinsten van der Nederlandsche Flora. [Additions to the flora of the Netherlands.] Nederland. Kruidk. Arch. 1923: 116-137. 1924.—A considerable number of the new adventive plants in the Netherlands was found near the Wormerveer flour factories, which obtain much of the grain from Algeria. The writer's list, therefore, contains many plants native to southern Europe and northern Africa.—J. C. Th. Uphof.

8166. MERRILL, E. D. An enumeration of Philippine flowering plants. Vol. 1. vii + 463 p. 1922-1925; Vol. 2. 530 p. 1923; Vol. 3. 628 p. 1923. Bur. Sci. Publ. [Philippine Is.] 18.—This is an attempt to summarize our present knowledge of the Philippine flora, the number of species admitted being 8120, distributed into about 1450 genera. Full synonymy is given, the aim being to account for all binomials accredited to the Philippine flora in botanical literature. The habitats, Philippine and extra-Philippine ranges, altitudinal ranges, and relative abundance are indicated for each species, and all known native names are recorded. Illustrative specimens are cited for all rare species and in all the species admitted in large critical genera. The nomenclature in general follows the International Code, and the arrangement is that of the Engler and Prantl system. The Philippine flora is remarkable for its high percentage of specific endemism, over 5300 species, or 66% of those admitted being known only from the Archipelago; in contrast to this only 34 of the 1450 genera are endemic. The endemism is very largely confined to those forms that occur only in the primary forests. The flora is notable for the great development of woody plants, somewhat over 3000 species of trees, shrubs, and woody vines being represented. Each volume contains



a brief index to the families and genera admitted. The large families are the Orchidaceae (text contributed by OAKES AMES, see this issue, Entry 8109), Rubiaceae, Euphorbiaceae, Myrtaceae, Melastomataceae, Leguminosae, Gramineae, Araceae, Cyperaceae, and Myrsinaceae. Among the very large genera are *Freycinetia*, *Pandanus*, *Calamus*, *Bulbopyllum*, *Dendrobium*, *Eria*, *Dendrochilum*, *Eria*, *Ficus*, *Elatostema*, *Loranthus*, *Canarium*, *Aglaia*, *Saurauia*, *Begonia*, *Eugenia*, *Medinilla*, *Schefflera*, *Ardisia*, *Symplocos*, *Cyrtandra* and *Psychotria*. The concluding volume, which will be issued in the near future will contain full indices to all technical and native names, a complete bibliography, and an extensive discussion of the general features of the flora and its relationships, together with a sketch of the history of Philippine botany.—*Author*.

8167. MUNZ, PHILIP A. Southern California plant notes. I. Bull. Southern California Acad. Sci. 22: 7-11. 1923.—Distributional notes are given for 27 species distributed in the following genera: *Carex*, *Veratrum*, *Microstylis*, *Spiranthes*, *Celtis*, *Eriogonum*, *Monolepis*, *Sagina*, *Euphorbia*, *Cassia*, *Acer*, *Elatine*, *Viola*, *Petalonyx*, *Cornus*, *Chimaphila*, *Androsace*, *Centunculus*, *Dodecatheon*, *Asclepias*, *Harpagonella*, *Galium*, *Brandegea*, *Bahia*, and *Franseria*.—*L. R. Abrams*.

8168. MUNZ, PHILIP A. Southern California plant notes. II. Bull. Southern California Acad. Sci. 23: 127-132. 1924.—Notes are given on species in the following genera: *Cupressus*, *Orcuttia*, *Allium*, *Calochortus*, *Nolina*, *Eriogonum*, *Tetragonia*, *Silene*, *Diplotaxis*, *Eruca*, *Parnassia*, *Sibbaldia*, *Polygala*, *Pedicularis*, *Penstemon*, *Parishella*, *Anaphalis*, *Lepidospartum*, *Lygodesmia*, *Senecio*, *Ceanothus*, *Cornus*, *Pyrola*, *Trichostema*, and *Mimulus*.—*L. R. Abrams*.

8169. NEWSOM, VESTA MARIE. Violets of southern California. Bull. Southern California Acad. Sci. 23: 159-164. 1924.—Nine species are recognized. Keys, descriptions and distributional notes are given.—*L. R. Abrams*.

8170. OSTERHOUT, GEORGE E. The genus *Hymenopappus* in Colorado. Bull. Torrey Bot. Club 52: 105-107. 1925.—A key and discussion are given of 5 species of *Hymenopappus* which are recognized from Colorado: *H. luteus* Nutt., *H. tenuifolius* Pursh, *H. polycephalus* Osterhout, *H. arenosus* Heller, and *H. nudatus* Wooton & Standley.—*P. A. Munz*.

8171. PROVASI, T. La "Florula Mediolanensis" inedita di Domenico Vandelli (1735-1816). [The unedited "Florula Mediolanensis" of D. Vandelli.] Nuovo Gior. Bot. Italiano N.S. 31: 235-254. 1924.—Brief introductory notes precede a list of 241 species (including varieties) of plants collected by D. Vandelli at and in the immediate vicinity of the city of Milan, Italy, from February to May, 1763.—*P. D. Caldis*.

8172. RECHINGER, KARL. Floristische Beiträge. [Floristic contributions.] Oesterreich. Bot. Zeitschr. 74: 131-139. 1925.—Among other plants enumerated there are several interesting hybrids of *Rumex*, as well as *Veronica aquatica* Bernh. f. *ternatifolia*, a new form from Lower Austria.—*H. Cammerloher* (translated).

8173. RODEGHER, A. Il genere "Hieracium" nelle Alpi Orobie. [The genus "Hieracium" in the Orobie Alps.] Nuovo Gior. Bot. Italiano N.S. 31: 255-274. 1924.—This is a list with habitat and other notes of the species and varieties of the genus *Hieracium* found in the Orobie Alps, extracted from the unpublished work of Emilio and Alcide Rodegher "Prospetto della Flora delle Alpi Orobie."—*P. D. Caldis*.

8174. ST. JOHN, HAROLD. Note sur la Flore du Labrador. [Note on the flora of Labrador.] Nat. Canadien 51: 195-201. 1925.—The article consists substantially of critical notes on 74 species of plants of a list by P. Lemay at Rivière-Pentecôte on the north coast of the Gulf of St. Lawrence in the year 1895, and published in Nat. Canadien 49: 183-186, 1923. The closing paragraph sums up the comments as follows: "In conclusion, the most of the plants which l'Abbé Lemay has listed are well known as having been observed on the north coast. Nineteen species are without doubt inexactly attributed to this region. But there remain 18 species which have never been observed on the north coast and which cannot be accepted as veritable additions."—*A. H. MacKay*.

8175. SIBILIA, C. Ricerche floristiche sul territorio di Anagni. Nota II. [Flora of the territory of Anagni. 2nd Note.] Nuovo Gior. Bot. Italiano N.S. 31: 161-176. 1924.—Six hundred and seventy species of plants collected and 67 cultivated in the territory of Anagni, Italy, are listed.—*P. D. Caldis*.



8176. SOEST, J. L. VAN. *Flora van Arnhem. II.* [Flora of Arnhem. II.] Nederland Kruidk. Arch. 1923: 68-115. 1924.—Localities of plants are given from the environments of Arnhem, especially of the Cucurbitaceae, Plantaginaceae, Campanulaceae, Compositae, Dipsaceae, Valerinaceae, Rubiaceae, Caprifoliaceae, Cornaceae, Araliaceae and Umbelliferae. The flora of the Netherlands is relatively new. It dates back from post-diluvial and alluvial times.—*J. C. Th. Uphof.*

8177. WANGERIN, WALTER. *Floristische Beobachtungen bei St. Anton am Arlberg und bei Vent im Ötztal.* [Floristic observations near St. Anton at Arlberg and near Vent in Ötztal.] Oesterreich. Bot. Zeitschr. 74: 126-130. 1925.—This work contains the enumeration of a number of plants which were collected in 1924 during a summer sojourn in Tyrol and which are also cited by Dalla Torre and Sarntheim in the Flora of Tyrol and Voralberg. New localities and notes on distribution are given.—*H. Cammerhofer (translated).*

8178. WEIN, KURT. *Die älteste Geschichte von Fagopyrum tataricum (L.) Gärt.* [The oldest history of Fagopyrum tataricum.] Oesterreich. Bot. Zeitschr. 74: 51-57. 1925.—The author is opposed to the view of Ascherson that *Fagopyrum tartaricum* was introduced as a weed into central Europe with *F. sagittatum* from a common Siberian habitat. From a study of the literature he reaches the conclusion that the plant was first grown in 1735 by A. F. Walther in his private garden in Leipzig as a garden plant. A more general cultivation followed at a later time, while *F. sagittatum* was generally cultivated in the 15 or 16th century.—*H. Cammerhofer (translated).*

## MISCELLANEOUS UNCLASSIFIED PUBLICATIONS

SAM F. TRELEASE, *Editor*

8179. ANONYMOUS. *Ein Schiff durch Sojabohnen gesprengt.* [A ship burst by soy-beans.] Tropenpflanzer 23: 196. 1920.—The Japanese steamer Toki Maru was sunk in the port of Copenhagen. Afterward the front of the ship, which was loaded with sacks of soy-beans, burst open, the thick iron plates being ruptured by the swollen soy-beans.—*J. C. Th. Uphof.*

8180. ANDERSON, O. *Über ein neues Verfahren bei Anwendung der "Variate-Difference"-Methode.* [A new process in the application of the "variate-difference" method.] Biometrika 15: 134-149. *Fig. 1-5.* 1923.—The "episeccular component" or series of deviations from the trend of a time series is classified into 4 groups. Criteria are obtained for these classes, and the application of the variate difference method is simplified.—*J. R. Miner.*

8181. CAMP, B. H. *Probability integrals for the point binomial.* Biometrika 16: 163-171. 1924.—The author derives approximations for the sum of terms of a point binomial and for the area of the tail of a frequency curve.—*J. R. Miner.*

8182. KRONFELD. *Die Zauberhasel.* [Witch-hazel.] Mitteil. Deutsch. Dendrol. Ges. 31: 249-271. 1921.—The witch-hazel, *Corylus Avellana*, is described in mythology, where it was used by witches, and in finding hidden wells, etc.—*J. C. Th. Uphof.*

8183. McMAHON, J. *Hyperspherical goniometry; and its application to correlation theory for n variables.* Biometrika 15: 173-208. 1923.—Formulae of spherical trigonometry are generalized for  $n$  dimensional space and applied to multiple correlation. Expressions are derived for partial correlation coefficients in terms of total, and vice versa, for regression loci and scatter, and for multiple correlation coefficients.—*J. R. Miner.*

8184. NARUMI, S. *On the general forms of bivariate frequency distributions which are mathematically possible when regression and variation are subjected to limiting conditions.* Parts 1 and 2. Biometrika 15: 77-88, 209-221. 1923.—The most general surface considered in this paper may be reduced to a surface completely homoscedastic for both variates by suitable modification of the units in which variation is measured in each array. Various special cases are considered. In a surface homoscedastic for both variates, one correlation ratio cannot be zero and the other finite unless the arrays one way are exponential curves. Unless  $r = \pm 1$ , linear homoscedastic regression for both variates is only possible in the case of the normal correlation surface. General equations are deduced for bivariate homoscedasticity, for bivariate linear heteroscedasticity with linear regression, for bivariate hyperbolic heteroscedasticity with hyperbolic regression, and for parabolic variance with linear regression.—*J. R. Miner.*



8185. O'ROKE, E. C. **Micro slide rings.** *Science* 61: 392. 1925.—The rings may be cut from sheet celluloid by hollow punches and fastened to the slide after dipping in liquid nitro-cellulose (celluloid dissolved in amyl acetate). Xylol does not affect them.—*C. J. Lyon.*

8186. PEARSON, K. **Notes on skew frequency surfaces.** *Biometrika* 15: 222-230. 1 fig. 1923.—The author discusses the Filon-Isserlis skew correlation surface. Marginal totals and arrays are Pearson Type I curves. Regression and scedasticity are linear, correlation a function of  $\beta$ 's of marginal distributions, an unfortunate limitation.—*J. R. Miner.*

8187. PEARSON, K. **On a certain double hypergeometrical series and its representation by continuous frequency surfaces.** *Biometrika* 16: 172-188. *Fig. 1-3.* 1924.—The distribution of a character in 2nd samples from a limited population for known 1st sample is given by a double hypergeometrical series, having double linear regression and double parabolic scedasticity, and bounded by a right triangle. Neither Pearson's non-skew frequency surface nor the Filon-Isserlis skew surface fits the series adequately.—*J. R. Miner.*

8188. PEARSON, K. **On non-skew frequency surfaces.** *Biometrika* 15: 231-244. 1923.—The author develops a correlation surface for  $\beta_1 = \beta'_1 = 0$ ;  $\beta_2 = \beta'_2 =$  an arbitrary value, in which the correlation is independent of the  $\beta$ 's. Marginal totals and arrays are Pearson Type II curves. Regression is linear; scedasticity, hyperbolic or elliptic. If  $\beta_2 = \beta'_2 = 3$ , surface becomes Gaussian.—*J. R. Miner.*

8189. PEARSON, K. **On the difference and the doublet tests for ascertaining whether two samples have been drawn from the same population.** *Biometrika* 16: 249-252. 1924.—Of 2 equally logical tests of the consubstantiality of samples, the more stringent is preferable. The difference test is therefore better than the Rhodes doublet test. For  $N$  samples, a comparison of each pair of samples or of each sample with total of samples is safer than the Rhodes method. The contingency table is not comparable to a group of samples.—*J. R. Miner.*

8190. PEARSON, K. **On the mean-error of frequency distributions.** *Biometrika* 16: 198-200. 1924.—From the differential equation of the Pearsonian frequency curves, the following relation is derived:

$$\frac{\sigma^2 2y_0}{N e_m} = \frac{6(\beta_2 - \beta_1 - 1)}{4\beta_2 - 3\beta_1}$$

where  $e_m$  = mean error. Formulae are also derived for the centroid of the tail, or of the portion between 2 ordinates, of a frequency curve.—*J. R. Miner.*

8191. PEARSON, K. **On the moments of the hypergeometrical series.** *Biometrika* 16: 157-162. 1924.—The moments of the hypergeometrical series about its mean are given by the relation

$$\{(1+E)^s - E^s\} \{\mu_2 - (nq + r\overline{p} - q)\mu_1 + rqp(n-r)\mu_0\} = n\mu_{s+1},$$

where  $E$  denotes the operation  $E\mu_s = \mu_{s+1}$ . The moments of the binomial, Poisson series, and normal curve are special cases.—*J. R. Miner.*

8192. RHODES, E. C. **On the problem whether two given samples can be supposed to have been drawn from the same population.** *Biometrika* 16: 239-248. 1924.—The author proposes as the probability of 2 samples being from the same population, the chance of pairs of frequencies (doublets) less likely than the observed pair. This leads, for 2 samples each divided into 2 classes, to  $\chi^2$  test with  $n' = 3$ . The usual comparison of the difference of the proportions in 2 samples corresponds to  $\chi^2$  test with  $n' = 2$ . The new method is extended to 2 samples, each of  $s + 1$  classes, when  $n' = 2s + 1$ , and to  $N$  samples, when  $n' = Ns + 1$ . The method may be applied to the contingency table by treating each array as a sample.—*J. R. Miner.*

8193. ROMANOVSKY, V. **Generalization of some types of the frequency curves of Professor Pearson.** *Biometrika* 16: 106-117. 1924.—Frequency distributions may be fitted with series, using Pearsonian Types I, II, or III as generating function, in the same way as Charlier uses normal curve.—*J. R. Miner.*

8194. SANDER, AUGUST. **Die Birke, mutig und kick.** [Birch.] *Mitteil. Deutsch. Dendrol. Ges.* 28: 273-279. 1919.—The folklore of the birch in various parts of Europe is mentioned.—*J. C. Th. Uphof.*

8195. SCHWERIN, FRITZ VON. **Pflanzen-Wunder der Fakire und der Spiritisten.** [Plant wonders of fakirs and of spiritists.] *Mitteil. Deutsch. Dendrol. Ges.* 31: 192-198. 1921.—Instantaneous germination of mango seed and other such tricks of magic are described, without explanation.—*J. C. Th. Uphof.*

